WALWORTH M'F'G. CO.
BOSTON.

POCKET CATALOGUE.
REVISED TO MAY, 1905.

The Genuine Stillson Wrench

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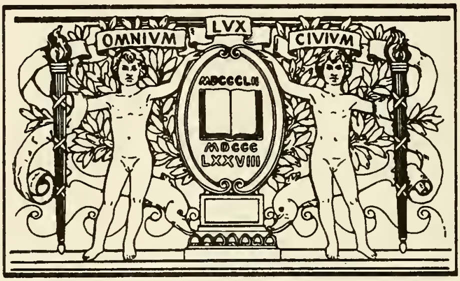

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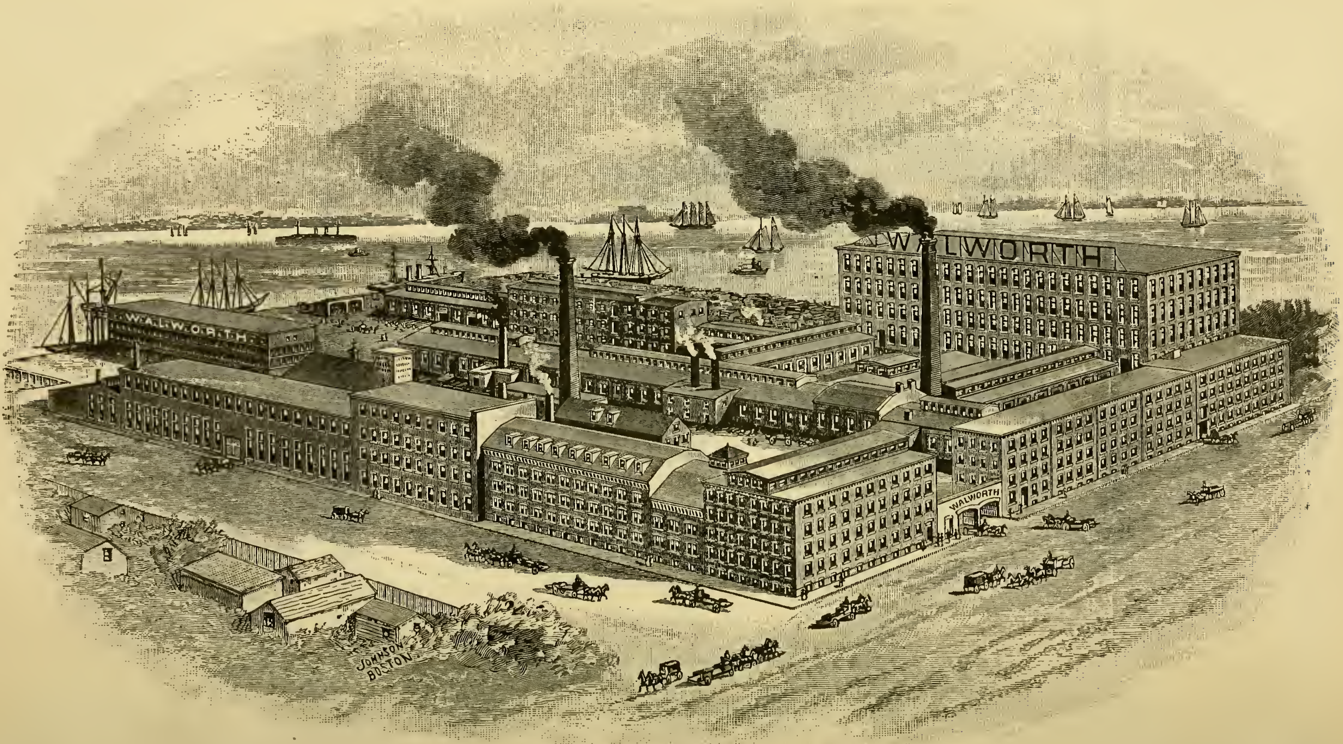

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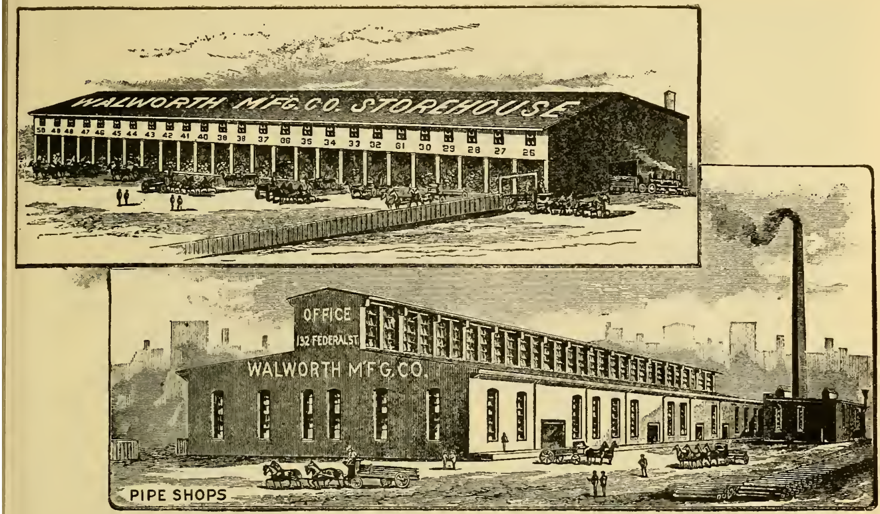

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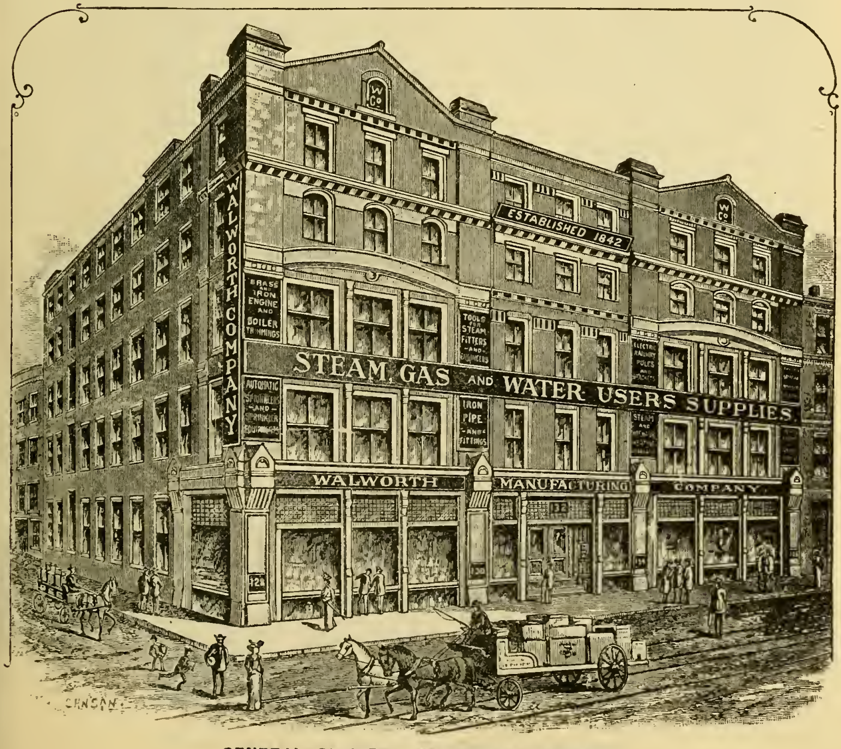
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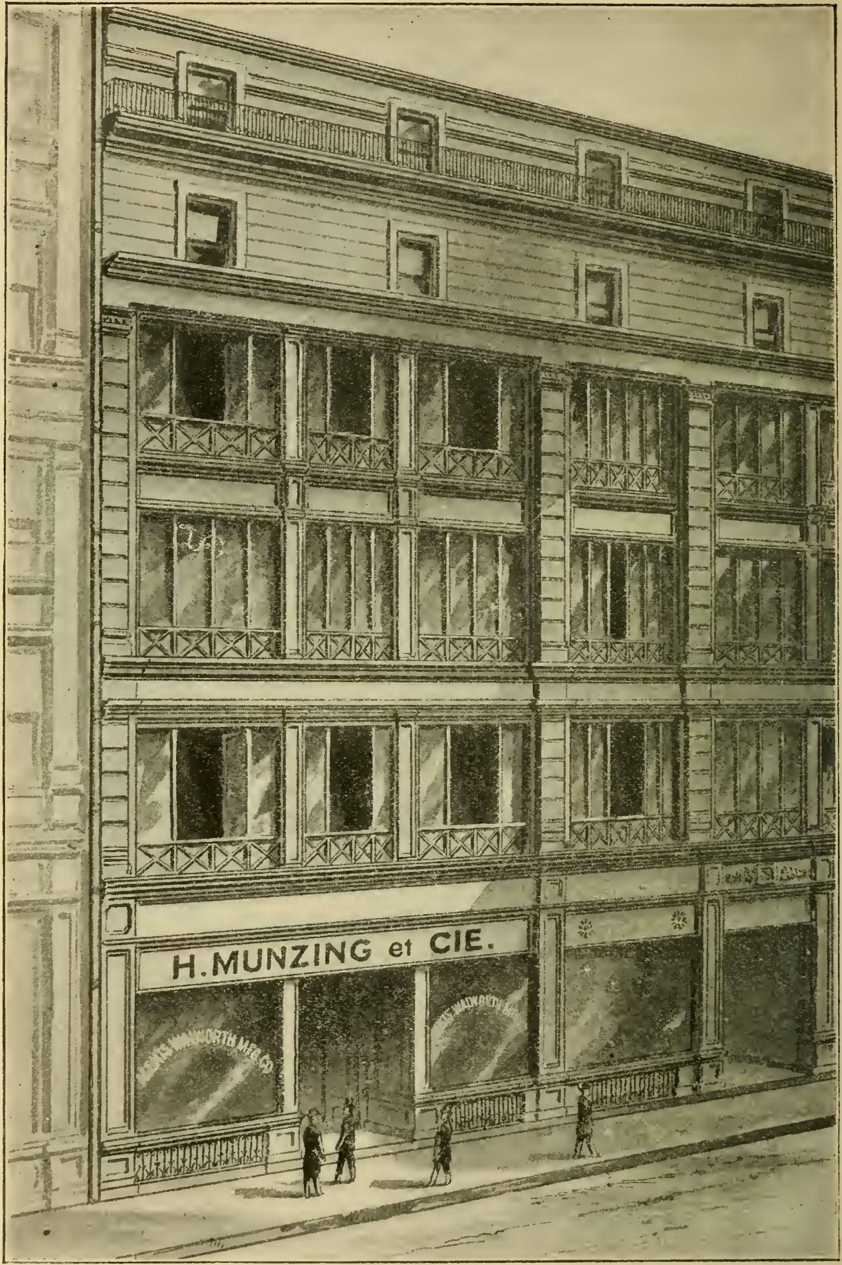
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There are two parties to a contract (sale). The purchaser rightly holds the seller to the terms. He should not forget his own part of the contract when payment is due.

Claims for corrections or deductions must be made within 10 days of receipt of goods.

Stenographic and clerical errors are subject to correction.

In order that correspondence may receive prompt attention, it should be addressed to the Company and not to individuals.

All contracts or orders subject to approval at our home office.

Orders regularly entered upon our books cannot be countermanded except with our consent, and upon terms that will indemnify us against loss.

Parties desiring to return goods should first arrange with us for so doing.

Specifications for goods not standard should be explicit and complete, and, when possible, accompanied by blue print or sketch.

Goods made to order or differing from standard cannot be returned except by special agreement.

We will replace defective goods or credit them at our invoice price, but will allow no charges (other than freight) for labor, expense, or damage on account of defective material.

All shipments are f. o. b. When prices are specially quoted "with freight allowance," it refers only to shipments weighing 100 lbs. or over, our responsibility ceasing when receipt is obtained from Transportation Company.

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All agreements or contracts made by us are contingent upon strikes, fires, accidents, or causes beyond our control.

We prove our count in packing by weighing packages. Claims for shortages must be subject to that test.

WALWORTH MANUFACTURING CO.

Boston, September, 1902.

GENERAL DIVISIONS OF CATALOGUE.

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Flanged Fittings
Pipe Bends . . . . 78 to 101
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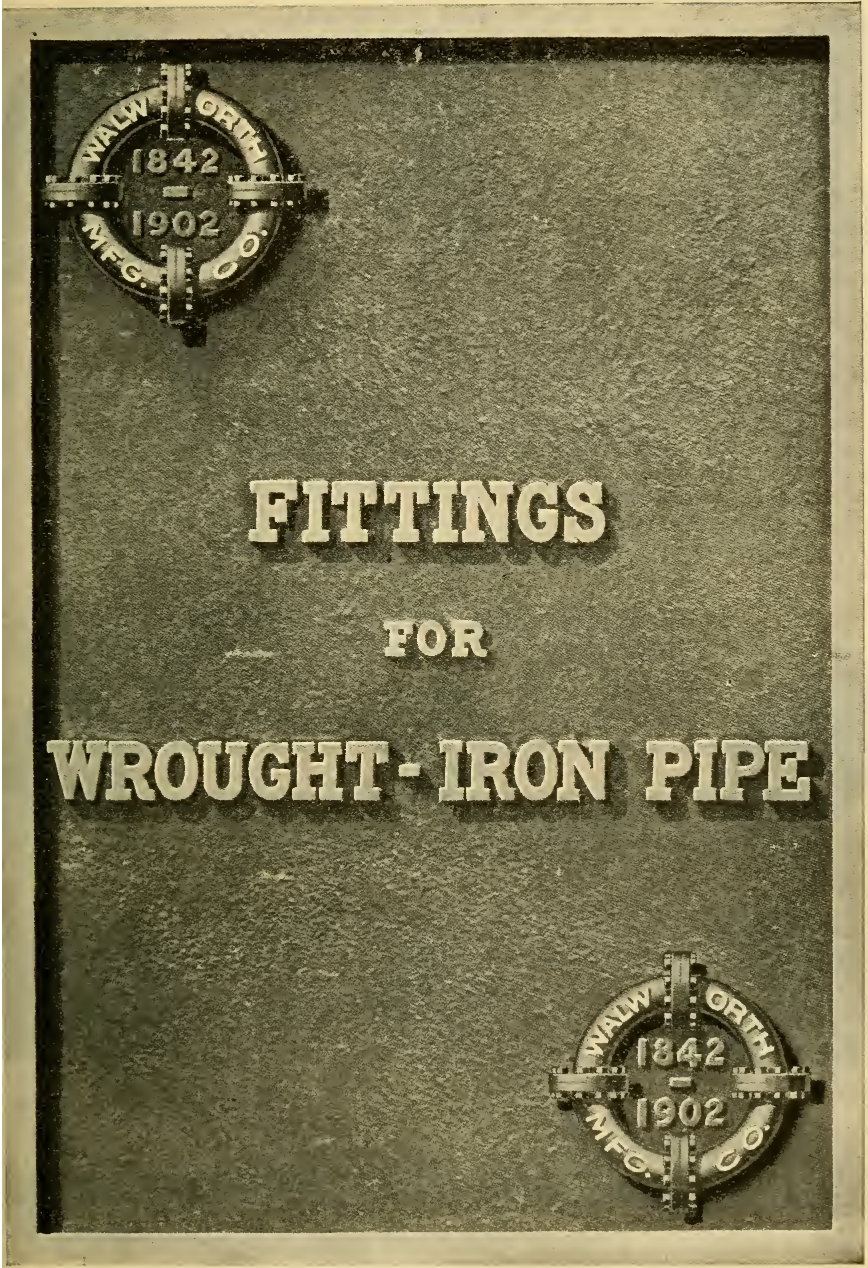

WALWORTH
1842
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1902
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FITTINGS
FOR
WROUGHT-IRON PIPE

WALWORTH
1842
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1902
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CAST-IRON FITTINGS.

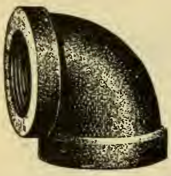


FIG. 1. STRAIGHT ELBOW.

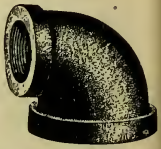


FIG. 2. REDUCING ELBOW.

ELBOWS—STRAIGHT SIZES.—FIG. 1.

SIZE	¼	⅜	½	¾	1	1¼	1½	2	2½	3
EACH	.05	.05	.06	.08	.10½	.16	.20	.28	.50	.75
SIZE	3½	4	4½	5	6	7	8	9	10	12
EACH	1.05	1.20	1.75	2 00	2.75	4.70	6.75	9.00	13.50	20.00

ELBOWS—REDUCING SIZES.—FIG. 2.

SIZE	⅜	½	¾	1	1¼	1½	2	2½	3	3½
EACH	.06	.07	.09	.12	.18	.23	.32	.60	.85	1.20
SIZE	4	4½	5	6	7	8	9	10	12	....
EACH	1.40	2.00	2.30	3.15	5.40	7.75	10.50	15.50	23.00	....

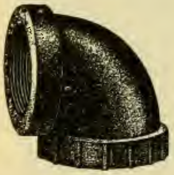


FIG. 3. RIGHT AND LEFT ELBOW.

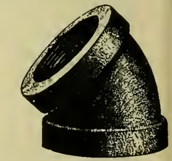


FIG. 4. 45° ELBOW.

ELBOWS—RIGHT AND LEFT.—FIG. 3.

SIZE	¼	⅜	½	¾	1	1¼	1½	2	2½	3	3½	4	4½	5	6
EACH	.06	.06	.07	.09	.12	.18	.23	.32	.60	.85					

ELBOWS—45°—FIG. 4.

SIZE	¼	⅜	½	¾	1	1¼	1½	2	2½	3	3½
EACH	.06	.06	.07	.10	.12	.19	.24	.34	.60	.90	1.25
SIZE	.....	4	4½	5	6	7	8	9	10	12	.....
EACH	.....	1.45	2.20	2.50	3.45	5.90	8.50	11.25	17.00	25.00	.....

FOR LIST ON GALVANIZED CAST-IRON FITTINGS, SEE PAGE 24.

CAST-IRON FITTINGS.

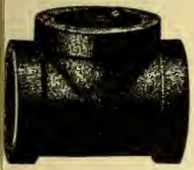


FIG. 5. STRAIGHT TEE.

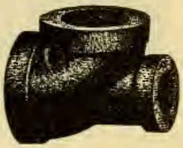


FIG. 6. REDUCING TEE.

TEES—STRAIGHT SIZES.—FIG. 5.

SIZE..........	¼	⅜	½	¾	1	1¼	1½	2	2½	3
EACH.......	.08	.08	.09	.12	.15	.23	.29	.41	.73	1.10
SIZE..........	3½	4	4½	5	6	7	8	9	10	12
EACH........	1.50	1.75	2.55	3.00	4.00	6.80	9.75	13.00	19.50	29.00

TEES—REDUCING SIZES.—FIG. 6.

SIZE........	⅜	½	¾	1	1¼	1½	2	2½	3	3½
EACH..........	.09	.10	.14	.17	.27	.33	.47	.83	1.25	1.75
SIZE..........	4	4½	5	6	7	8	9	10	12	
EACH..........	2.00	2.95	3.50	4.60	7.80	11.25	15.00	22.50	33.50	

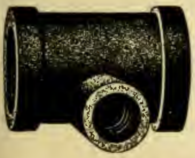


FIG. 7. ECCENTRIC TEE.

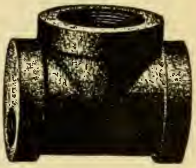


FIG. 8. ECCENTRIC TEE.

ECCENTRIC TEES.—FIGS. 7 AND 8.

These fittings are designed to prevent the accumulation and lodgment of condensation.
Orders must be accompanied with sketch, showing position in which the fitting is to be placed.
To order only.

FOR LIST ON GALVANIZED CAST-IRON FITTINGS, SEE PAGE 24

CAST-IRON FITTINGS.

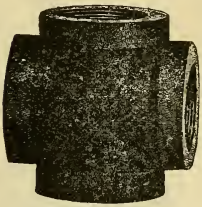


FIG. 9. STRAIGHT CROSS.

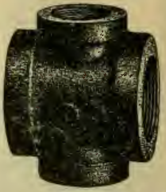


FIG. 10. REDUCING CROSS.

CROSSES — STRAIGHT SIZES. — FIG. 9.

SIZE	⅜	½	¾	1	1¼	1½	2	2½	3	3½	4	4½
EACH	.15	.16	.22	.27	.42	.53	.75	1.30	2.00	2.70	3.15	4.60
SIZE	5	6	7	8	9	10	12	.....	.....	.....	.....	.....
EACH	5.50	7.25	12.25	17.50	23.50	35.00	52.50	.....	.....	.....	.....	.....

CROSSES — REDUCING SIZES. — FIG. 10.

SIZE	.....	½	¾	1	1¼	1½	2	2½	3	3½	4	4½
EACH	.....	.18	.25	.30	.46	.60	.83	1.45	2.20	3.00	3.50	5.10
SIZE	5	6	7	8	9	10	12	.....	.....	.....	.....	.....
EACH	6.00	8.00	13.50	19.25	26.00	38.50	58.00	.....	.....	.....	.....	.....

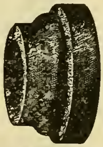


FIG. 11. REDUCING COUPLING.

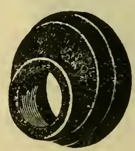


FIG. 12. OFFSET REDUCING COUPLING.

REDUCING COUPLINGS — FIG. 11.

SIZE	1½	2	2½	3	3½	4	4½	5	6	7	8	9	10	12
EACH		.43	.60	.80	1.00	1.35	1.85	2.00	2.70	5.35	6.75	8.35	10.00	15.00

OFFSET REDUCING COUPLINGS. — FIG. 12.

SIZE	1	1¼	1½	2	2½	3	3½	4	5	6
EACH	.50	.55	.72	1 00	1.50	2.40	3.00	4.00	6.00	8.00

FOR LIST OF GALVANIZED CAST-IRON FITTINGS, SEE PAGE 24.

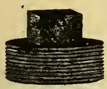


FIG. 13. SQUARE HEAD PLUG.

CAST-IRON FITTINGS.

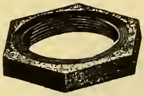


FIG. 16. LOCKNUT.

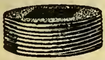


FIG. 14. SOCKET PLUG.

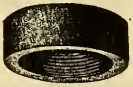


FIG. 15. CAP.

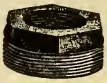


FIG. 17. BUSHING.

PLUGS. — SQUARE HEAD. — FIG. 13.

SIZE	⅛	¼	⅜	½	¾	1	1¼	1½	2	2½	3	3½
EACH	.02	.02	.02	.02	.03	.04	.05	.07	.10	.18	.25	.38
SIZE	4	4½	5	6	7	8	9	10	12	....	....	....
EACH	.42	.65	.88	1.20	1.85	2.75	3.25	3.75	5.00	....	....	....

SOCKET PLUGS.—FIG. 14.

SIZE	⅛	¼	⅜	½	¾	1	1¼	1½	2	2½	3	3½	4
SOCKET PLUGS, FIG. 14.........EACH....	....	....	....	.04	.06	.08	.09	11	15	30	40	.62	.70
PLUSS TAPPED FOR AIR COCK, EACH ...	....	....	....	....	.12	15	20	.25	.30	...	...	...	....
LEFT-HAND PLUGS, EACH	....	....	....	....	06	.08	.09	.11	.15	....	....	....	...
SOLID PLUGS, EACH	.02	.02	.02	.04	.06	.08	09	.11	.15	.27	.38	.57	.63

CAPS. — FIG. 15.

SIZE	2	2½	3	3½	4	4½	5	6	7	8	9	10	12
EACH	.26	.40	.54	.75	.87	1.05	1.20	1.55	2.50	2.85	4.75	5.50	7.00

LOCKNUTS —FIG. 16.

SIZE	2	2½	3	3½	4	4½	5	6	7	8	9	10	12
EACH	.25	.27	.34	.47	.64	.85	.90	1.30	1.70	2.35	2.70	3.00	4.00

BUSHINGS.—FIG. 17.

SIZE		¾	1	1¼	1½	2	2½	3	3½	4	4½	5
EACH		.05	.06	.07	.09	.14	.21	.30	.40	.50	.75	.93
SIZE	6	7	8	9	10	12	....	....	....	....	....	....
EACH	1.25	1.87	2.75	3.25	3.75	5.00	....	....	....	....	....	....

Following sizes of Bushings are furnished in malleable only: 2½ x 2, 2 x 1½, 1½ x1¼, 1¼ x 1, 1 x ¾, x ½, ½ x ⅜, ½ x ¼, ½ x ⅛, ⅜ x ¼, ⅜ x ⅛, ¼ x ⅛.

FOR LIST ON GALVANIZED FITTINGS, SEE PAGE 24.

CAST-IRON FITTINGS.

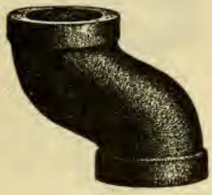


FIG. 18. OFFSET.

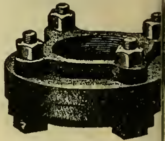


FIG. 19. FLANGE UNIO

OFFSETS.—FIG. 18.

SIZE	¾	1	1¼	1½	2	2½	3	3½	4	5	6
TO OFFSET 4 INCHES	.45	.70	1.00	1.20	1.80	3.00	4.00	5.00	6.00	8.00	10.
TO OFFSET 6 INCHES	.67	1.05	1.50	1.80	2.70	4.50	6.00	7.50	9.00	12.00	15.
TO OFFSET 8 INCHES	.90	1.40	2.00	2.40	3.60	6.00	8.00	10.00	12.00	16.00	20.

FLANGE UNIONS.—FIG. 19.

SIZE	½	¾	1	1¼	1½	2	2½	3	3½	4
DIAMETER OF FLANGES	3	3¼	3⅝	4⅛	4⅝	5¼	5¾	6½	7¼	8
DIAMETER BOLT CIRCLE	2	2¼	2⅝	3⅛	3½	4	4½	5¼	6	6½
NUMBER OF BOLTS	4	4	4	4	4	4	4	4	4	5
EACH	.40	.46	.52	.64	.78	1.00	1.25	1.50	1.80	2.1
SIZE	4½	5	6	7	8	9	10	12	.....	...
DIAMETER OF FLANGES	8¾	9½	10¾	12½	14	15	17	19	.....	...
DIAMETER BOLT CIRCLE	7¼	8	9¼	10½	12	12¼	14½	17	.....	...
NUMBER OF BOLTS	5	5	6	6	8	8	10	12	.....	...
EACH	2.70	3.15	3.95	5.50	7.00	10.00	11.50	16.00	.....	...

EXTRA HEAVY FLANGE UNIONS.

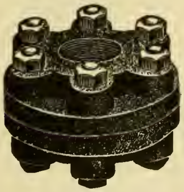


FIG. 19 A.
EXTRA HEAVY UNION.

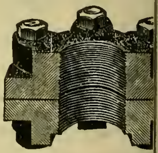
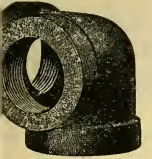


FIG. 19 A.
SECTIONAL CUT.

EXTRA HEAVY FLANGE UNIONS.—FIG. 19 A.

SIZE	¾	1	1¼	1½	2	2½	3	3½	4	5	6	7	8	9	10	1
DIAM. FLANGES	...	4	5	6	6½	7¾	8¼	8¾	9	10¼	11½	14	15	16	17½	2
DIAM. BOLT CIRCLE	...	2¾	3½	4½	5	5¾	6½	6¾	7⅝	8½	9¾	11⅞	13	14	15¼	1
NUMBER BOLTS	...	4	5	5	5	6	6	6	8	8	8	12	12	12	16	1
PRICE, EACH	...	1.65	2.20	3.45	3.75	4.85	6.50	7.60	8.80	9.90	11.60	18.50	19.75	22.50	28.00	43.



20. SIDE OUTLET ELBOW.

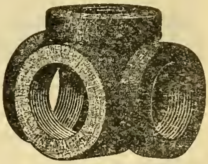


FIG. 21. SIDE OUTLET TEE.

SIDE OUTLET ELBOWS.—FIG. 20.

IZE	½	¾	1	1¼	1½	2	2½	3	3½	4
ACH	.18	.24	.30	.48	.60	.84	1.50	2.25	3.15	3.60
IZE	4½	5	6	7	8	9	10	12	.....	.....
ACH	5.25	6.00	8.25						.....	.....

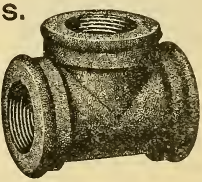
SIDE OUTLET TEES.—FIG. 21.

IZE	½	¾	1	1¼	1½	2	2½	3	3½	4
ACH	.27	.36	.45	.70	.90	1.25	2.25	3.25	4.50	5.25
IZE	4½	5	6						.....	.....
ACH	7.65	9.00	12.00						.....	.....

FOR LIST ON GALVANIZED FITTINGS, SEE PAGE 24.

ROUND BEAD CAST-IRON FITTINGS.

ROUND BEAD ELBOW.



ROUND BEAD TEE.

In order to meet a demand from a portion of our trade for Cast-Iron Fittings with Round Beads, we are pidly completing patterns for this style of fitting. At present we are prepared with straight sizes of elbows d tees from one fourth inch to four inch, inclusive, which we can furnish promptly from stock. In ordering, stomers will be careful to specify *Round Beads.*

PRICE LIST FOR THREADING PIPE.

SIZE	¼	⅜	½	¾	1	1¼	1½	2	2½	3	3½	4
EACH THREAD	.06	.06	.06	.06	.06	.07	.08	.10	.20	.30	.36	.40
SIZE	4½	5	6	7	8	9	10	11	12	14	15	16
EACH THREAD	.50	.50	.70	1.00	1.20	1.60	2.00	2.50	2.50	4.50	5.50	6.00

CAST-IRON FITTINGS.

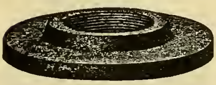


FIG. 22. CAST-IRON FLANGE.

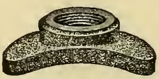


FIG. 23. CURVED FLANGE.

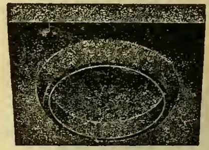


FIG. 23 A. POST FLANGE.

CAST-IRON FLANGES.—FIG. 22.

Size Pipe.	½	¾	1	1¼	1½	2	2½	3	3½	4	4½	5	6	7	8	9	10	12
Diameter.																		
3	.10	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
3½	.15	.15	.15	.16	...	...	...	...	...	...	...	...	...	...	...	...	...	...
4	.22	.22	.16	.16	...	...	...	...	...	...	...	...	...	...	...	...	...	...
4½	.25	.25	.25	.25	.22	...	...	...	...	...	...	...	...	...	...	...	...	...
5	.35	.30	.30	.30	.30	.35	...	...	...	...	...	...	...	...	...	...	...	...
5½	.45	.45	.40	.40	.40	.35	.40	...	...	...	...	...	...	...	...	...	...	...
6	.50	.50	.42	.40	.40	.42	.42	.50	...	...	...	...	...	...	...	...	...	...
6½	.65	.60	.60	.60	.55	.50	.50	.50	.65	...	...	...	...	...	...	...	...	...
7	.75	.75	.75	.70	.70	.62	.62	.62	.75	...	...	...	...	...	...	...	...	...
7½	.90	.90	.90	.85	.85	.80	.80	.75	.85	.90	...	...	...	...	...	...	...	...
8	1.00	1.00	1.00	.95	.95	.90	.90	.90	.90	.90	...	...	...	...	...	...	...	...
8½	1.25	1.25	1.25	1.15	1.15	1.10	1.10	1.10	1.00	1.00	...	...	...	...	...	...	...	...
9	...	...	1.35	1.35	1.35	1.30	1.25	1.15	1.15	1.15	1.15	1.40	...	...	...	...	...	...
9½	...	...	...	1.90	1.90	1.75	1.75	1.60	1.60	1.50	1.25	1.50	1.50	...	...	...	...	...
10	...	...	...	2.25	2.25	2.15	2.00	1.80	1.50	1.50	1.50	1.50	1.50	...	...		...	...
11	...	...	...	...	...	2.50	2.50	2.25	2.25	2.00	1.75	1.75	1.75	2.20	...	...	...	...
12	...	...	...	...	...	...	3.00	3.00	2.75	2.50	2.50	2.20	2.20	2.20	2.80	...	...	...
13	...	...	...	...	...	...	...	3.50	3.50	3.25	3.00	3.00	2.80	2.80	2.80	...	...	...
14	...	...	...	...	...	...	...	4.00	4.00	3.75	3.75	3.50	3.25	3.25	3.25	3.75	4.00	...
15	...	...	...	...	...	...	...	...	...	...	...	...	...	4.00	4.00	4.00	4.50	...
16	...	...	...	...	...	...	...	...	...	...	...	...	...	5.00	5.00	5.00	5.00	6.00
17	...	...	...	...	...	...	...	...	...	...	...	...	...	6.50	6.50	5.75	5.75	7.00
18	...	...	...	...	...	...	...	...	...	...	...	...	...	...	8.00	8.00	7.00	7.00
19	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	7.50	7.50
20	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	8.50
Size Pipe.	½	¾	1	1¼	1½	2	2½	3	3½	4	4½	5	6	7	8	9	10	12

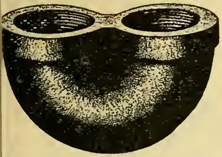
Curved Flanges — Fig. 23 — made to order at double above prices.

For list of Railing Flanges, drilled for screws, see page 65. For list of Galvanized Fittings, see page 24.

SQUARE POST FLANGES.—FIG. 23 A.

SIZE PIPE	3	3½	4	5	6
DIAMETER	8	8	8	10	10
EACH	1.85	1.85	1.85	2.90	2.90

CAST-IRON FITTINGS.



G. 24. RETURN BEND—CLOSE PATTERN.

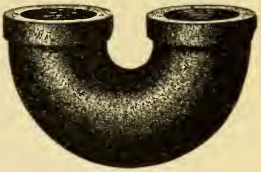


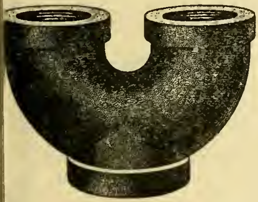
FIG. 25. RETURN BEND—OPEN PATTERN.

RETURN BENDS—CLOSE PATTERN.—FIG. 24.

SIZE	½	¾	1	1¼	1½	2	2½	3
CENTRE TO CENTRE	1½	1½	1¾	2¼	2¾	3¼	3½	4⅜
EACH	.18	.20	.22	.28	.40	.57	1.20	1.70
RIGHT AND LEFT, EACH	.21	.23	.26	.33	.46	.66	1.40	1.95
WITH PITCH, TO ORDER, EACH	...	...	.26	.33	...	...	...	...

RETURN BENDS—OPEN PATTERN.—FIG. 25.

SIZE	½	¾	1	1¼	1½	2	2½	3
CENTRE TO CENTRE	1¾	2⅛	2½	3	3½	4½	5	6½
EACH	25	.26	.30	.40	.55	.80	1.35	2.20
RIGHT AND LEFT, EACH	30	.30	.35	.46	.64	.92	1.55	2.50



IG. 26. RETURN BEND—BACK OUTLET.

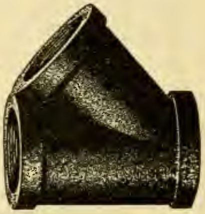


FIG. 27. Y BRANCH.

RETURN BENDS—BACK OUTLET.—FIG. 26.

SIZE	¾	1	1¼	1½	2	2½	3
CENTRE TO CENTRE	2⅛	2½	3	3½	4½	5	6½
EACH	.38	.42	.60	.80	1.15	2.00	3.00

Y BRANCHES.—FIG. 27.

SIZE	½	¾	1	1¼	1½	2	2½	3	3½	4	4½	5	6	7	8	10	12
EACH	.20	.28	.34	.54	.66	.94	1.66	2.50	3.50	4.00	5.90	7.00	9.20	15.60	22.50	45.00	67.00
REDUCING, EACH	.23	.33	.40	.62	.76	1:08	1.90	2.90	4.00	4.60	6.80	8.00	10.60	18.00	26.00	51.75	77.00

FOR LIST ON GALVANIZED FITTINGS, SEE PAGE 24.

CAST-IRON FITTINGS.

GALVANIZED.

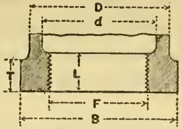
SIZE	¼	⅜	½	¾	1	1¼	1½	2	2½	3	3½	4	4½	5	6	7	8	9	10	12
ELBOWS	.10	.10	.12	.16	.21	.32	.40	.56	1.00	1.50	2.10	2.40	3.50	4.00	5.50	9.40	13.50	18.00	27.00	40.00
ELBOWS, REDUCING	...	.12	.14	.18	.24	.36	.46	.64	1.20	1.70	2.40	2.80	4.00	4.60	6.30	10.80	15.50	21.00	31.00	46.00
ELBOWS, 45°	.12	.12	.14	.20	.24	.38	.48	.68	1.20	1.80	2.50	2.90	4.40	5.00	6.90	11.80	17.00	22.50	34.00	50.00
TEES	.16	.16	.18	.24	.30	.46	.58	.82	1.46	2.20	3.00	3.50	5.10	6.00	8.00	13.60	19.50	26.00	39.00	58.00
TEES, REDUCING	...	.18	.20	.28	.34	.54	.66	.94	1.66	2.50	3.50	4.00	5.90	7.00	9.20	15.60	22.50	30.00	45.00	67.00
CROSSES	...	.30	.32	.44	.54	.84	1.06	1.50	2.60	4.00	5.40	6.30	9.20	11.00	14.50	24.50	35.00	47.00	70.00	105.00
CROSSES, REDUCING	...	...	.36	.50	.60	.92	1.20	1.66	2.90	4.40	6.00	7.00	10.20	12.00	16.00	27.00	38.50	52.00	77.00	116.00
BUSHINGS	...	.08	.08	.10	.12	.14	.18	.28	.42	.60	.80	1.00	1.50	1.85	2.50	3.75	5.50	6.50	7.50	10.00
PLUGS	.04	.04	.04	.06	.08	.10	.14	.20	.36	.50	.76	.84	1.30	1.75	2.40	3.70	5.50	6.50	7.50	10.00
CAPS	...	...	...	...	...	...	...	.52	.80	1.08	1.50	1.74	2.10	2.40	3.10	5.00	5.70	9.50	11.00	14.00
REDUCING COUPLINGS	...	...	...	...	...	...	...	.86	1.20	1.60	2.00	2.70	3.70	4.00	5.40	10.70	13.50	16.70	20.00	30.00
LOCK NUTS	...	...	...	...	...	...	...	.50	.54	.68	.94	1.28	1.70	1.80	2.60	3.40	4.70	5.40	6.00	8.00
Y BRANCHES	...	...	.40	.56	.68	1.08	1.32	1.88	3.32	5.00	7.00	8.00	11.80	14.00	18.40	31.20	45.00	...	90.00	134.00
RETURN BENDS, CLOSE	...	...	.36	.40	.44	.56	.80	1.14	2.40	3.40	...	...	...	...	...	...	...	...	...	...
RETURN BENDS, OPEN	...	...	.50	.52	.60	80	1.10	1.60	2.70	4.40	...	...	...	...	...	...	...	...	...	...
RETURN BENDS, Back-Outlet	...	...	...	.76	.84	1.20	1.60	2.30	4.00	6.00	...	...	...	...	...	...	...	...	...	...
FLANGE UNIONS	...	...	.80	.92	1.04	1.28	1.56	2.00	2.50	3.00	3.60	4.20	5.40	6.30	7.90	11.00	14.00	20.00	23.00	32.00
OFFSETS TO OFFSET 4″	...	...	...	.90	1.40	2.00	2.40	3.60	6.00	8.00	10.00	12.00	...	16.00	20.00	...	...	...	...	...
OFFSETS TO OFFSET 6″	...	...	...	1.34	2.10	3.00	3.60	5.40	9.00	12.00	15.00	18.00	...	24.00	30.00	...	...	...	...	...
OFFSETS TO OFFSET 8″	...	...	...	1.80	2.80	4.00	4.80	7.20	12.00	16.00	20.00	24.00	...	32.00	40.00	...	...	...	...	...

Table 100.

Walworth Standard Weight Screwed Fittings.

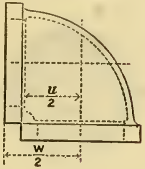
Table 100.

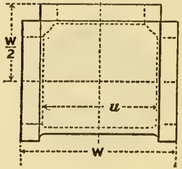
Working Steam Pressure, 100 lbs.



DIMENSIONS.

Pipe Size	inches		1/4	3/8	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3	3 1/2	4	4 1/2	5	6	7	8	9	10	12
Outside Diameter of Pipe	„		0.54	0.675	0.84	1.05	1.315	1.66	1.9	2.37	2.87	3 1/2	4	4 1/2	5	5.56	6.62	7.62	8.62	9.68	10 3/4	12 3/4
Thickness of Shell	„		1/8	9/64	9/64	11/64	3/16	3/16	7/32	1/4	9/32	5/16	5/16	5/16	11/32	7/16	15/32	17/32	9/16	5/8	11/16	11/16
Outside Diameter of Drum	„	D	13/16	1 1/32	1 5/32	1 15/32	1 3/4	2 1/8	2 7/16	3	3 1/2	4 3/16	4 11/16	5 1/4	5 11/16	6 7/16	7 3/4	8 3/4	10	11 1/8	12 1/4	14 1/4
Inside Diameter of Drum	„	d	9/16	3/4	7/8	1 1/8	1 3/8	1 3/4	2	2 1/2	2 15/16	3 9/16	4 1/16	4 5/8	5	5 9/16	6 13/16	7 11/16	8 7/8	9 7/8	10 7/8	12 7/8
Outside Diameter of Bead	„	B	1	1 3/32	1 7/16	1 3/4	2 1/16	2 1/2	2 3/4	3 3/8	4 1/8	4 3/4	5 5/16	6	6 9/16	7 1/16	8 3/8	9 3/4	10 7/8	12 1/8	13 1/4	15 5/8
Length of Bead	„	T	1/4	5/16	3/8	7/16	1/2	9/16	5/8	11/16	13/16	15/16	1	1 1/16	1 1/8	1 1/8	1 1/8	1 3/16	1 3/8	1 7/16	1 5/8	1 3/4
Length of Thread	„	L	3/8	7/16	1/2	9/16	5/8	11/16	13/16	7/8	1	1	1 1/16	1 1/8	1 1/4	1 1/4	1 3/8	1 1/2	1 5/8	1 3/4	1 3/4	1 7/8
Number of Threads			18	18	14	14	11 1/2	11 1/2	11 1/2	11 1/2	8	8	8	8	8	8	8	8	8	8	8	8





Dimensions of Elbows and Tees.

Pipe Size	inches		1/4	3/8	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3	3 1/2	4	4 1/2	5	6	7	8	9	10	12
Face to Face	„	W	1 1/2	1 25/32	2 3/16	2 5/8	3 1/16	3 5/8	4	4 3/4	5 3/4	6 5/8	7 5/16	8 1/16	8 13/16	9 5/16	10 5/8	12 1/8	13 5/8	15	16 1/2	19 1/8
Center to Face	„	$\frac{W}{2}$	3/4	57/64	1 3/32	1 5/16	1 17/32	1 13/16	2	2 3/8	2 7/8	3 5/16	3 21/32	4 1/32	4 13/32	4 21/32	5 5/16	6 1/16	6 13/16	7 1/2	8 1/4	9 9/16
Thread to Thread	„	u	3/4	1 1/32	1 3/16	1 1/2	1 13/16	2 1/4	2 3/8	3	3 3/4	4 5/8	5 3/16	5 13/16	6 5/16	6 13/16	7 7/8	9 1/8	10 3/8	11 1/2	13	15 5/8

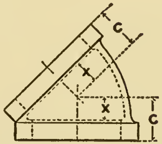
For Lists, see pages 16 and 17.

Table 100. — Continued.

Table 100. — Continued.

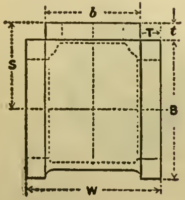
Walworth Standard Weight Screwed Fittings.

Working Steam Pressure, 100 lbs.



Dimensions of 45° Elbows.

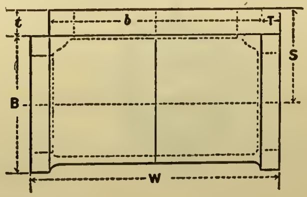
Pipe Size . . . inches		$\frac{1}{4}$	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{3}{4}$	1	$1\frac{1}{4}$	$1\frac{1}{2}$	2	$2\frac{1}{2}$	3	$3\frac{1}{2}$	4	$4\frac{1}{2}$	5	6	7	8	9	10	12
Center to Face . . „	C	$\frac{7}{16}$	$\frac{9}{16}$	$\frac{11}{16}$	$\frac{13}{16}$	$\frac{15}{16}$	$1\frac{1}{16}$	$1\frac{3}{16}$	$1\frac{3}{8}$	$1\frac{5}{8}$	$1\frac{7}{8}$	$2\frac{1}{16}$	$2\frac{1}{4}$	$2\frac{7}{16}$	$2\frac{9}{16}$	$2\frac{13}{16}$	$3\frac{1}{8}$	$3\frac{9}{16}$	$3\frac{7}{8}$	$4\frac{5}{16}$	$4\frac{7}{8}$
Center to Thread . „	X	$\frac{1}{16}$	$\frac{1}{8}$	$\frac{3}{16}$	$\frac{1}{4}$	$\frac{5}{16}$	$\frac{3}{8}$	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{5}{8}$	$\frac{7}{8}$	1	$1\frac{1}{8}$	$1\frac{3}{16}$	$1\frac{5}{16}$	$1\frac{7}{16}$	$1\frac{5}{8}$	$1\frac{15}{16}$	$2\frac{1}{8}$	$2\frac{9}{16}$	3



Face to Face and Center to Face measurements for Reducing Tees (reducing on outlet) and Bull-Head Tees (increasing on outlet) are determined as follows: —

For Face to Face (W), add to outside diameter of outlet bead b twice the length of the run bead T, or — Face to Face W = outlet $b + 2T$.

For Center to Face (S), take half of the outside diameter of run bead B, and add length of outlet bead t, or — Center to Face, $S = \frac{\text{Run } B}{2} +$ outlet t.



For Lists, see pages 16 and 17.

LIST OF STANDARD SIZES OF CAST-IRON FITTINGS.

MANUFACTURED BY WALWORTH MANUFACTURING CO.

Sizes differing from Standard Sizes, if furnished, are to be charged at five per cent. gross discount higher than Standard Sizes.

ELBOWS.

STRAIGHT SIZES.	¼	⅜	½	¾	1	1¼	1½	2	2½	3	3½	4	4½	5	6	7	8	9	10	12	

ELBOWS---REDUCING SIZES.

½ x ⅜ ¾ x ½ 1 x ¾ 1 x ½ 1¼ x 1 1¼ x ¾ 1¼ x ½	1½ x 1¼ 1½ x 1 1½ x ¾ 2 x 1½ 2 x 1¼ 2 x 1	2½ x 2 2½ x 1½ 3 x 2½ 3 x 2	3½ x 3 4 x 3½ 4 x 3 4 x 2½ 4 x 2	4½ x 4 5 x 4 5 x 3 6 x 5 6 x 4 7 x 6 8 x 6

45° ELBOWS.

STRAIGHT SIZES.	⅜	½	¾	1	1¼	1½	2	2½	3	3½	4	4½	5	6	7	8	9	10	12		

RIGHT AND LEFT ELBOWS.

STRAIGHT SIZES.	¼	⅜	½	¾	1	1¼	1½	2	2½	3											

REDUCING COUPLINGS.

2½ x 2 2½ x 1½ 3 x 2½ 3 x 2 3½ x 3 3½ x 2½	4 x 3½ 4 x 3 4 x 2½ 4 x 2 4½ x 4 5 x 4½ 5 x 4 5 x 3	6 x 5 6 x 4 6 x 3 6 x 2½ 6 x 2 7 x 6 8 x 6 8 x 4 10 x 8 10 x 6 12 x 10

CAST-IRON FITTINGS.

TEES.

STRAIGHT SIZES.	¼	⅜	½	¾	1	1¼	1½	2	2½	3	3½	4	4½	5	6	7	8	9	10	12

TEES---REDUCING SIZES.

NOTE. — Tees which reduce on the outlet, thus:

1¼
2—|—2

are read, 2 x 1¼.

Tees reducing on run, thus:

1¼
2—|—1½

are read, 2 x 1½ x 1¼.

Tees with both ends of run the same size, with the outlet larger, thus:

2
1—|—1

are known as Bull Head, and are read 1 x 2.

Reducing on Outlet.	Reducing on Run.	Bull Head.
½ x ⅜	½ x ⅜ x ½	⅜ x ½
	½ x ⅜ x ⅜	½ x 1
¾ x ½		½ x ¾
¾ x ⅜	¾ x ½ x 1	
	¾ x ½ x ¾	¾ x 2
1 x ¾	¾ x ½ x ½	¾ x 1½
1 x ½	¾ x ⅜ x ¾	¾ x 1¼
1 x ⅜	¾ x ⅜ x ⅜	¾ x 1
1¼ x 1	1 x ¾ x 2	1 x 2
1¼ x ¾	1 x ¾ x 1½	1 x 1½
1¼ x ½	1 x ¾ x 1¼	1 x 1¼
	1 x ¾ x 1	
1½ x 1¼	1 x ¾ x ¾	1¼ x 2
1½ x 1	1 x ¾ x ½	1¼ x 1½
1½ x ¾	1 x ½ x 1	
1½ x ½	1 x ½ x ¾	1½ x 2½
	1 x ½ x ½	1½ x 2
2 x 1½	1 x ⅜ x 1	
2 x 1¼	1 x ¼ x 1	2 x 3
2 x 1	1¼ x 1 x 2	2 x 2½
2 x ¾	1¼ x 1 x 1½	
2 x ½	1¼ x 1 x 1¼	2½ x 4
	1¼ x 1 x 1	2½ x 3
2½ x 2	1¼ x 1 x ¾	
2½ x 1½	1¼ x 1 x ½	3 x 4
2½ x 1¼	1¼ x ¾ x 2	3 x 3½
2½ x 1	1¼ x ¾ x 1½	
2½ x ¾	1¼ x ¾ x 1¼	3½ x 4
2½ x ½	1¼ x ¾ x 1	
3 x 2½	1¼ x ¾ x ¾	4 x 6
3 x 2	1¼ x ½ x 1½	4 x 5
3 x 1½	1¼ x ½ x 1¼	
3 x 1¼		5 x 6
3 x 1	1½ x 1¼ x 2	
3 x ¾	1½ x 1 x 2	6 x 8
	1½ x ¾ x 2	6 x 7
	1½ x 1¼ x 1½	
	1½ x 1¼ x 1¼	
	1½ x 1¼ x 1	
	1½ x 1¼ x ¾	
	1½ x 1¼ x ½	
	1½ x 1 x 1½	
	1½ x 1 x 1¼	

CAST-IRON FITTINGS.

TEES--CONTINUED.

Reducing on Outlet.

3½ x 3
3½ x 2½
3½ x 2
3½ x 1½
3½ x 1¼
3½ x 1

4 x 3½
4 x 3
4 x 2½
4 x 2
4 x 1½
4 x 1¼
4 x 1
4 x ¾

4½ x 4
4½ x 3½
4½ x 3
4½ x 2½
4½ x 2

5 x 4
5 x 3½
5 x 3
5 x 2½
5 x 2
5 x 1½
5 x 1¼

6 x 5
6 x 4
6 x 3½
6 x 3
6 x 2½
6 x 2

7 x 6
7 x 5
7 x 4
7 x 3
8 x 6
8 x 5
8 x 4
8 x 3½
8 x 3
8 x 2½
8 x 2
9 x 5
10 x 8
10 x 6
10 x 5
10 x 4
12 x 10
12 x 8
12 x 6

14 x 8
14 x 6

Reducing on Run.

1½ x 1 x 1
1½ x 1 x ½
1½ x ¾ x 1½
1½ x ¾ x 1¼
1½ x ¾ x 1
1½ x ¾ x ¾
1½ x ½ x 1½
1½ x ½ x 1¼
2 x 1½ x 2½
2 x 1½ x 2
2 x 1½ x 1½
2 x 1½ x 1¼
2 x 1½ x 1
2 x 1½ x ¾
2 x 1½ x ½
2 x 1¼ x 2
2 x 1¼ x 1½
2 x 1¼ x 1¼
2 x 1¼ x 1
2 x 1¼ x ¾
2 x 1 x 2
2 x 1 x 1½
2 x 1 x 1¼
2 x 1 x 1
2 x 1 x ¾
2 x ¾ x 2
2 x ¾ x 1½
2 x ½ x 2
2½ x 2 x 3
2½ x 2 x 2½
2½ x 2 x 2
2½ x 2 x 1½
2½ x 2 x 1¼
2½ x 2 x 1
2½ x 1½ x 2½
2½ x 1½ x 2
2½ x 1½ x 1½
2½ x 1½ x 1
2½ x 1¼ x 2½
2½ x 1¼ x 2
2½ x 1 x 2½
2½ x ¾ x 2½
3 x 2½ x 3
3 x 2½ x 2½
3 x 2½ x 2
3 x 2½ x 1½
3 x 2½ x 1¼
3 x 2½ x 1
3 x 2 x 3
3 x 2 x 2½
3 x 2 x 2
3 x 2 x 1½
3 x 2 x 1¼
3 x 2 x 1
3 x 1½ x 3
3 x 1½ x 2½
3 x 1½ x 2
3 x 1¼ x 3
3 x 1 x 3
3½ x 3 x 3
3½ x 3 x 2½
3½ x 3 x 2
3½ x 3 x 1½
3½ x 2½ x 3

Reducing on Run.

3½ x 2½ x 2½
3½ x 2½ x 2
3½ x 2 x 3½
3½ x 1½ x 3½
3½ x 1¼ x 3½
3½ x 1 x 3½
4 x 3½ x 3½
4 x 3½ x 3
4 x 3½ x 2½
4 x 3 x 4
4 x 3 x 3½
4 x 3 x 3
4 x 3 x 2½
4 x 3 x 2
4 x 3 x 1½
4 x 3 x 1¼
4 x 3 x 1
4 x 3 x ¾
4 x 2½ x 4
4 x 2½ x 3
4 x 2½ x 2½
4 x 2½ x 2
4 x 2½ x 1
4 x 2 x 4
4 x 2 x 3
4 x 2 x 2½
4 x 2 x 2
4 x 2 x 1½
4 x 1½ x 4
4 x 1¼ x 4
4 x 1 x 4
5 x 4 x 5
5 x 4 x 4
5 x 4 x 3
5 x 4 x 2½
5 x 4 x 2
5 x 3 x 5
5 x 3 x 4
5 x 3 x 3
5 x 3 x 2½
5 x 3 x 2
5 x 2½ x 5
5 x 2½ x 4
5 x 2½ x 3
5 x 2 x 5
6 x 5 x 6
6 x 5 x 5
6 x 4 x 6
6 x 3 x 6
6 x 2½ x 6
7 x 6 x 7
7 x 6 x 6
7 x 6 x 5
7 x 5 x 5
8 x 7 x 6
8 x 6 x 8
8 x 6 x 7
8 x 6 x 6
8 x 5 x 8
8 x 5 x 5
8 x 4 x 8
10 x 8 x 8
12 x 8 x 10
12 x 8 x 8

CAST-IRON FITTINGS.

CROSSES.

STRAIGHT..................	⅜	½	¾	1	1¼	1½	2	2½	3	3½	4	4½	5	6	7	8	9	10	12

CROSSES.—REDUCING SIZES.

NOTE.—The outlets of a cross are always the same size, and are indicated by the last figure. Thus: A

½

Cross ¾ —┼— ¾ is called a ¾x½ Cross. A Cross reducing on the run, thus, 1½ —┼— 1¼ is called a 1½x1¼x1 Cross.

½ 1 1

Reducing on Outlets.	Reducing on Outlets.	Reducing on Outlets.
¾ x ½	3 x 2½	6 x 2½
	3 x 2	6 x 2
1 x ¾	3 x 1½	
1 x ½	3 x 1¼	7 x 6
	3 x 1	7 x 5
1¼ x 1	3 x ¾	
1¼ x ¾		8 x 7
1¼ x ½	3½ x 3	8 x 6
	3½ x 2½	
1½ x 1¼	3½ x 2	10 x 8
1½ x 1	4 x 3½	10 x 7
1½ x ¾	4 x 3	
1½ x ½	4 x 2½	12 x 10
	4 x 2	12 x 8
2 x 1½		
2 x 1¼	5 x 4	
2 x 1	5 x 3	
2 x ¾	5 x 2½	
	5 x 2	
2½ x 2		
2½ x 1½	6 x 5	
2½ x 1¼	6 x 4	
2½ x 1	6 x 3½	
2½ x ¾	6 x 3	

RETURN BENDS.—CLOSE PATTERN.

SIZES	½	¾	1	1¼	1½	2	2½	3

RETURN BENDS.—OPEN PATTERN.

SIZES.......	½	¾	1	1¼	1½	2	2½	3

OFFSETS.—TO OFFSET 4, 6 AND 8 INCHES.

SIZES.........	¾	1	1¼	1½	2	2½	3	3½	4	5	6	......	......

BUSHINGS.

[NOTE. — Bushings reducing one size only up to and including 2½″ are malleable, and will be found, therefore, listed among the malleable fittings.]

½ x ¼

¾ x ⅜
¾ x ¼

1 x ½
1 x ⅜
1 x ¼

1¼ x ¾
1¼ x ½
1¼ x ⅜

1½ x 1
1½ x ¾
1½ x ½

2 x 1¼
2 x 1
2 x ¾
2 x ½

2½ x 1½
2½ x 1¼
2½ x 1
2½ x ¾

3 x 2½
3 x 2
3 x 1½
3 x 1¼
3 x 1
3 x ¾

3½ x 3
3½ x 2½
3½ x 2
3½ x 1½
3½ x 1¼
3½ x 1

4 x 3½

4 x 3
4 x 2½
4 x 2
4 x 1½
4 x 1¼
4 x 1

4½ x 4
4½ x 3½
4½ x 3
4½ x 2½
4½ x 2

5 x 4½
5 x 4
5 x 3½
5 x 3
5 x 2½
5 x 2

6 x 5
6 x 4½
6 x 4
6 x 3½
6 x 3
6 x 2½
6 x 2

7 x 6
7 x 5
7 x 4½
7 x 4
7 x 3½
7 x 3
7 x 2½
7 x 2

8 x 7

8 x 6
8 x 5
8 x 4
8 x 3
8 x 2

9 x 8
9 x 7
9 x 6

10 x 8
10 x 6

12 x 10
12 x 8
12 x 6

CAPS.

2	2½	3	3½	4	4½	5	6	7	8	9	10	12

PLUGS.

¼	⅜	½	¾	1	1¼	1½	2	2½	3	3½	4	4½	5	6	7	8	9	10	12

LOCKNUTS.

2	2½	3	3½	4	4½	5	6	7	8	9	10	12

Y BRANCHES.

REDUCING SIZES TO ORDER.

½	¾	1	1¼	1½	2	2½	3	3½	4	5	6	7	8	9	10

FLANGE UNIONS.

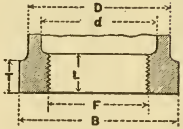
½	¾	1	1¼	1½	2	2½	3	3½	4	4½	5	6	7	8	9	10	12

Table 101.

Table 101.

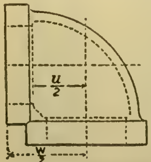
Walworth Extra Heavy Screwed Fittings.

Working Steam Pressure, 250 lbs.



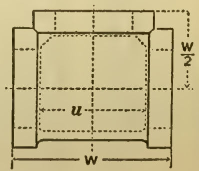
DIMENSIONS.

Pipe Size . . . inches		1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3	3 1/2	4	4 1/2	5	6	7	8	9	10	12
Outside Diameter of Pipe . . "		0.84	1.05	1.315	1.66	1.9	2.37	2.87	3 1/2	4	4 1/2	5	5.56	6.62	7.62	8.62	9.68	10 3/4	12 3/4
Thickness of Shell . . "	.	1/4	1/4	5/16	11/32	3/8	7/16	9/16	5/8	21/32	23/32	3/4	3/4	13/16	13/16	27/32	7/8	15/16	1 1/8
Outside Diameter of Drum . . "	D	1 3/8	1 5/8	2	2 7/16	2 3/4	3 3/8	4 1/16	4 13/16	5 3/8	6 1/16	6 1/2	7 1/16	8 7/16	9 5/16	10 9/16	11 5/8	12 3/4	15 1/8
Inside Diameter of Drum . . "	d	7/8	1 1/8	1 3/8	1 3/4	2	2 1/2	2 15/16	3 9/16	4 1/16	4 5/8	5	5 9/16	6 13/16	7 11/16	8 7/8	9 7/8	10 7/8	12 7/8
Outside Diameter of Bead . . "	B	1 21/32	1 29/32	2 5/16	2 3/4	3 1/16	3 3/4	4 9/16	5 3/8	6	6 13/16	7 3/8	7 15/16	9 5/16	10 5/16	11 9/16	12 3/8	13 3/4	16 1/2
Length of Bead . . . . . "	T	7/16	1/2	9/16	11/16	3/4	7/8	1	1 1/4	1 5/16	1 7/16	1 9/16	1 11/16	1 3/4	1 13/16	1 7/8	1 7/8	2	2 1/8
Length of Thread . . . . . "	L	9/16	5/8	11/16	13/16	7/8	1	1 1/8	1 3/8	1 7/16	1 9/16	1 11/16	1 13/16	1 7/8	1 15/16	2	2	2 1/8	2 1/4
Number of Threads . .		14	14	11 1/2	11 1/2	11 1/2	11 1/2	8	8	8	8	8	8	8	8	8	8	8	8



Dimensions of Elbows and Tees.

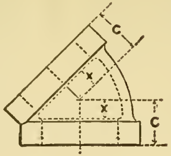
Pipe Size inches		1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3	3 1/2	4	4 1/2	5	6	7	8	9	10	12
Face to Face . "	W	2 5/16	2 3/4	3 3/16	3 7/8	4 1/8	5	6	7 3/8	8 1/16	8 15/16	9 11/16	10 7/16	11 5/8	13	14 3/8	15 1/2	17 1/4	19 7/8
Center to Face "	W/2	1 5/32	1 3/8	1 19/32	1 15/16	2 1/16	2 1/2	3	3 11/16	4 1/32	4 15/32	4 27/32	5 7/32	5 13/16	6 1/2	7 3/16	7 3/4	8 5/8	9 15/16
Thread to Thread "	U	1 3/16	1 1/2	1 13/16	2 1/4	2 3/8	3	3 3/4	4 5/8	5 3/16	5 13/16	6 5/16	6 13/16	7 1/8	9 3/8	10 3/8	11 1/2	13	15 3/8



For Lists, see page 34.

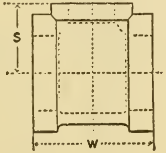
Walworth Extra Heavy Screwed Fittings.

Working Steam Pressure, 250 lbs.

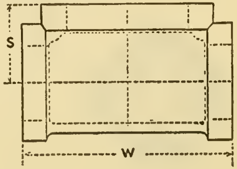


Dimensions of 45° Elbows.

Pipe Size . . . . inches		½	¾	1	1¼	1½	2	2½	3	3½	4	4½	5	6	7	8	9	10	12
Center to Face . . . . . . ,,	C	¾	⅞	1	1 8/16	1¼	1½	1¾	2¼	2 7/16	2 11/16	2⅞	3⅛	3 5/16	3 9/16	3 15/16	4⅛	4 11/16	5¼
Center to Thread . . . . . ,,	X	3/16	¼	5/16	⅜	⅜	½	⅝	⅞	1	1⅛	1 3/16	1 5/16	1 7/16	1⅝	1 15/16	2⅛	2 9/16	3



The dimensions of Extra Heavy Reducing Tees will be same as dimensions of Standard Weight, plus the extra length of thread, as shown by tables.



For Lists, see page 34.

PRICE LIST
OF
EXTRA HEAVY SCREWED FITTINGS.

WORKING STEAM PRESSURE 250 LBS.

TABLE NO. 101.

SIZE	½	¾	1	1¼	1½	2	2½	3	3½	4	4½	5	6	7	8	10	12
ELBOWS	.25	.30	.35	.45	.60	.75	1.25	2.00	2.75	3.50	4.25	5.50	8.00	12.00	17.00	28.00	40.00
ELBOWS, REDUCING	....	....	.40	.52	.69	.86	1.44	2.30	3.16	4.02	4.90	6.32	9.20	13.80	19.55	32.20	46.00
TEES	.40	.45	.55	.70	.90	1.15	1.80	3.00	4.25	5.50	6.75	8.25	12.00	18.00	25.00	42.00	60.00
TEES, REDUCING	....	....	.75	1.00	1.25	1.60	2.50	4.25	5.00	7.25	11.50	11.50	15.00	23.00	32.00	53.00	....
CROSSES	....	....	1.00	1.25	1.60	2.00	3.25	5.50	7.88	10.00	15.00	15.00	22.00	....	....	....	....
CROSSES, REDUCING	....	....	1.15	1.44	1.84	2.30	3.74	6.32	9.05	11.50	17.25	17.25	25.30	....	....	....	....
45° ELBOWS	....	....	.45	.55	.70	.90	1.50	2.50	3.50	4.50	5.50	6.75	9.75	14.50	21.00	35.00	....
Y BRANCHES	....	.90	1.05	1.25	2.00	2.65	3.25	4.50	5.75	7.25		13.00	....	....	....	....	....

For Right and Left Fittings add 15%.

GALVANIZING.

We have recently installed at our factory a **COMPLETE GALVANIZING PLANT,** where we are prepared to galvanize castings of all descriptions; also pipe and tubes of all sizes and lengths.

Table 102. Walworth Standard Weight Screwed Sweep Fittings. Table 102.

Working Steam Pressure, 100 lbs.

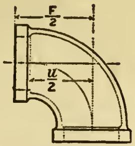


Table 102, No. A.

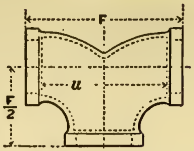


Table 102, No. B.

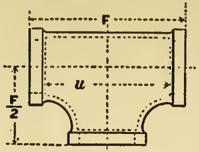


Table 102, No. C.

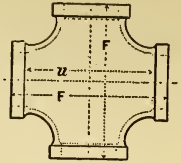


Table 102, No. D.

Dimensions of Elbows, Tees, and Crosses.

Pipe Size . . . . . inches					¾	1	1¼	1½	2	2½	3	3½	4	4½	5	6	7	8	9	10	12
Face to Face . . . . . "	F				4	4½	5¼	6	7¼	9½	11	11½	12	12½	14	15	17¾	19	21½	23	25½
Center to Face . . . . . "	F/2				2	2¼	2⅝	3	3⅝	4¾	5½	5¾	6	6¼	7	7½	8⅞	9½	10¾	11½	12¾

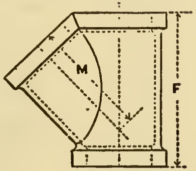
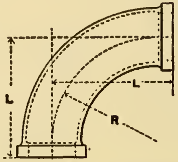


Table 102, No. E.



Extra Long Turn, Table 102, No. F.

Dimensions.

Pipe Size . . . . . inches					¾	1	1¼	1½	2	2½	3	3½	4	4½	5	6	7	8	9	10	12
Face to Face . . . . . "	F				2¾	3¼	3¾	4¾	5½	6¾	7⅝	8¾	9¾	10½	11¼	13	14¾	17	19	20¾	24¼
Center to Face . . . . . "	M				2 1/16	2 7/16	2 13/16	3¼	4	5	5¾	6¼	7¼	7⅞	8½	9⅝	11¼	13⅛	14½	15⅞	19
Center to Face . . . . . "	L				2¾	3 1/16	3⅜	4	5½	6⅛	7¼	8¼	10⅜	10⅞	11⅜	13	14½	18¼	21½	24¾	31
Radius of Center . . . . "	R				2¼	2½	2¾	3⅜	4¼	5¼	5⅞	6¾	9⅛	9¼	9½	11⅜	12¾	16½	19¾	22⅛	28¾

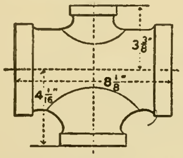
For Lists, see page 38.

Walworth Sweep Screwed Fittings.

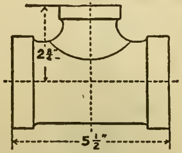
For 100 lbs. Working Steam Pressure.

Dimensions of Elbows, Tees, and Crosses, Reducing on Outlet.

Examples from Table.

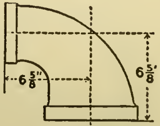


8″ × 3″ × 2″ × 1¼″ Cross.

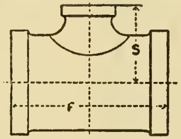


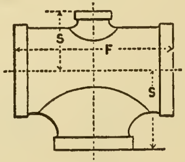
2″ × 2″ × 1″ Tee.

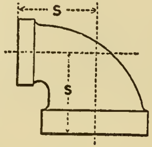
Diameter of Run (R)	⅜″	½″	¾″	1″	1¼″	1½″	2″	2½″	3″	3½″	4″	4½″	5″	6″	7″	8″	9″	10″	12″
¾″		3⅛ 1 9/16	4 2																
1″		4¼ 2⅛	4½ 2¼	4½ 2¼															
1¼″		4½ 2¼	4⅝ 2 5/16	4⅞ 2 7/16	5¼ 2⅝														
1½″		4¾ 2⅜	5 2½	5¼ 2⅝	5¾ 2⅞	6 3													
2″		5⅛ 2 9/16	5¼ 2⅝	5½ 2¾	5⅞ 2 15/16	6⅜ 3 3/16	7¼ 3⅝												
2½″			5⅜ 2 11/16	5⅞ 2 15/16	6¼ 3⅛	6⅝ 3 5/16	7⅜ 3 11/16	9½ 4¾											
3″				6⅜ 3 3/16	6¾ 3⅜	7¼ 3⅝	8⅛ 4 1/16	10 5	11 5½										
3½″					7¼ 3⅝	7¾ 3⅞	8⅝ 4 5/16	10⅝ 5 5/16	11½ 5¾	11½ 5¾									
4″					7¾ 3⅞	8¼ 4⅛	9⅛ 4 9/16	11 5½	12 6	12 6	12 6								
4½″						8¾ 4⅜	9¾ 4⅞	11½ 5¾	12½ 6¼	12½ 6¼	12½ 6¼	12½ 6¼							
5″						9½ 4¾	10⅜ 5 3/16	12¼ 6⅛	13¼ 6⅝	13¼ 6⅝	13¼ 6⅝	13¼ 6⅝	14 7						
6″						9½ 4¾	10½ 5¼	12½ 6¼	13¼ 6⅝	13¼ 6⅝	13¼ 6⅝	13¼ 6⅝	14 7	15 7½					
7″							12½ 6¼	14½ 7¼	15½ 7¾	15½ 7¾	15½ 7¾	15½ 7¾	16½ 8¼	17 8½	17¾ 8⅞				
8″							13¾ 6⅞	15½ 7¾	16½ 8¼	16½ 8¼	16½ 8¼	16½ 8¼	17¼ 8⅝	18¼ 9⅛	18¾ 9⅜	19 9½			
9″								16¾ 8⅜	17½ 8¾	17½ 8¾	17½ 8¾	17½ 8¾	18½ 9¼	19¼ 9⅝	20 10	20¼ 10⅛	21½ 10¾		
10″								17¾ 8⅞	18¾ 9⅜	18¾ 9⅜	18¾ 9⅜	18¾ 9⅜	18¾ 9⅜	20½ 10¼	21 10½	21¼ 10⅝	22¾ 11⅜	23 11½	
12″								20 10	21 10½	21 10½	21 10½	21 10½	21¾ 10⅞	22½ 11¼	23¼ 11⅝	23½ 11¾	24¾ 12⅜	25 12½	25½ 12¾
Diameter of Outlet . . . . (O)	⅜″	½″	¾″	1″	1¼″	1½″	2″	2½″	3″	3½″	4″	4½″	5″	6″	7″	8″	9″	10″	12″



5″ × 3″ Elbow.







For Lists, see page 88.

Table 102.—Continued.

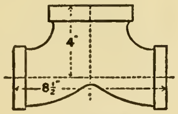
Table 102.—Continued.

Dimensions of Tees Increasing on Outlet. (Bull Head Tees.)

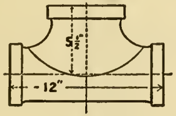
Sweep Fittings.

Diameter of Outlet . . . . . . (O)		12"	10"	9"	8"	7"	6"	5"	4½"	4"	3½"	3"	2½"	2"	1½"	1¼"	1"	¾"	½"	
Diameter of Run (R)	½"															4½ / 2¼	4⅛ / 2⅛	3¹³⁄₁₆ / 2	3½ / 1¾	F / S
	¾"													5½ / 2⅝	5 / 2½	4⅝ / 2⅝	4¼ / 2⅛	4 / 2	F / S	
	1"												6¼ / 2⅞	5¾ / 2¾	5¼ / 2⅝	4⅞ / 2½	4½ / 2¼			
	1¼"											7⅜ / 3⅜	6⅝ / 3⅛	6⅜ / 3	5⅝ / 2¾	5¼ / 2⅝				
	1½"										8¼ / 3¾	7¾ / 3½	7 / 3¼	6½ / 3⅛	6 / 3					
	2"									9½ / 4½	9 / 4⅜	8½ / 4	7¾ / 3¾	7¼ / 3⅝						
	2½"								11⅜ / 5¾	11¼ / 5¼	10⅝ / 5¼	10¼ / 5¼	9½ / 4¾							
	3"							14 / 5⅞	12½ / 5½	12 / 5½	11½ / 5½	11 / 5½								
	3½"						15 / 6⅝	14 / 6⅛	12½ / 5¾	12 / 5¾	11½ / 5¾									
	4"					17¾ / 7¼	15 / 6⅞	14 / 6⅝	12½ / 6	12 / 6										
	4½"				19 / 7½	17¾ / 7½	15 / 7⅛	14 / 6⅝	12½ / 6¼											
	5"			21½ / 8½	19 / 7⅞	17¾ / 7⅞	15 / 7½	14 / 7												
	6"		23 / 8⅞	21½ / 8⅝	19 / 8	17¾ / 7¾	15 / 7½													
	7"	25½ / 10	23 / 9⅞	21½ / 9⅝	19 / 9	17¾ / 8⅞														
	8"	25½ / 10½	23 / 10⅜	21½ / 10¼	19 / 9½															
	9"	25½ / 11⅛	23 / 11	21½ / 10¾																
	10"	25½ / 11¾	23 / 11¼																	
	12"	25½ / 12¾																		

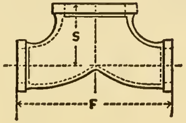
Examples from Table.

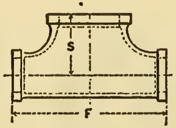


2" × 3" Tee.



3" × 4" Tee.





For Lists, see page 38.

PRICE LIST

OF

STANDARD WEIGHT SCREWED SWEEP FITTINGS.

WORKING STEAM PRESSURE 100 LBS.

TABLE NO. 102.

SIZE	¾	1	1¼	1½	2	2½	3	3½	4	4½	5	6	7	8	9	10	12
A. TABLE 102. ELBOWS	...	.32	.40	.55	.80	1.20	2.25	3.25	3.50	5.50	6.50	8.75	13.00	17.00	25.50	30.00	40.00
A. TABLE 102. ELBOWS, REDUCING	...	.48	.60	.83	1.20	1.80	3.38	4.88	5.25	8.25	9.75	13.13	19.50	25.50	38.25	45.00	60.00
B.&C. TABLE 102. TEES	...	.64	.80	1.10	1.60	2.40	4.50	6.50	7.00	11.00	13.00	17.50	26.00	34.00	51.00	60.00	80.00
B.&C. TABLE 102. TEES, REDUCING	...	.96	1.20	1.65	2.40	3.60	6.75	9.75	10.50	16.50	19.50	26.25	39.00	51.00	76.50	90.00	120.00
D. TABLE 102. CROSSES	...	.85	1.10	1.50	2.15	3.20	6.00	8.75	9.50	15.00	17.50	24.00	35.00	45.00	68.00	80.00	107.00
D. TABLE 102. CROSSES, REDUCING	...	1.28	1.65	2.25	3.23	4.80	9.00	13.13	14.25	22.50	26.25	36.00	52.50	67.50	102.00	120.00	160.50
E. TABLE 102. Y BRANCHES	SEE LIST ON PAGE 23, FIG. 27.																
F. TABLE 102. ELBOWS, EXTRA LONG TURN	...	.50	70	.90	1.20	2.00	3.00	4.00	5.00	7.00	9.00	13.00	20.00	28.00	34.00	40.00	60.00

GALVANIZING.

We have recently installed at our factory a **COMPLETE GALVANIZING PLANT,** wher we are prepared to galvanize castings of all descriptions; also pipe and tubes of all sizes and lengths.

Walworth Extra Heavy Sweep Screwed Fittings.

Working Steam Pressure 250 Lbs.

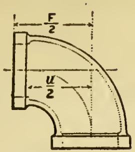


Table 103, No. A.

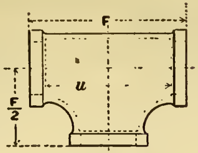


Table 103, No. C.

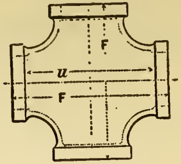


Table 103, No. D.

Dimensions of Elbows, Tees, and Crosses.

Pipe Size . . inches		3/4	1	1 1/4	1 1/2	2	2 1/2	3	3 1/2	4	4 1/2	5	6	7	8	9	10	12
Face to Face ..	F	4 1/8	4 5/8	5 1/2	6 1/8	7 1/2	9 3/4	11 3/4	12 1/4	12 7/8	13 3/8	15 1/8	16	18 5/8	19 3/4	22	23 3/4	26 1/4
Center to Face, ..	F/2	2 1/16	2 5/16	2 3/4	3 1/16	3 3/4	4 7/8	5 7/8	6 1/8	6 7/16	6 11/16	7 9/16	8	9 5/16	9 7/8	11	11 7/8	13 1/8

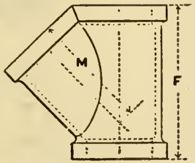
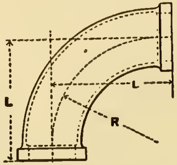


Table 103, No. E.



Extra Long Turn Elbows, Table 103, No. F.

Dimensions of Y's and Extra Long Turn Elbows.

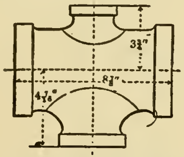
Pipe Size . . inches		3/4	1	1 1/4	1 1/2	2	2 1/2	3	3 1/2	4	4 1/2	5	6	7	8	9	10	12
Face to Face . ..	F	2 7/8	3 3/8	4	4 7/8	5 3/4	7	8 3/8	9 1/2	10 5/8	11 3/8	12 3/8	14	15 5/8	17 3/4	19 1/2	21 1/2	25
Center to Face . ..	M	2 1/8	2 1/2	3 1/8	3 5/16	4 1/8	5 1/8	6 1/8	6 7/8	7 11/16	8 5/16	9 1/16	10 3/8	11 11/16	13 1/2	14 3/4	16 1/4	19 3/8
Center to Face . ..	L	2 13/16	3 1/8	3 1/2	4 1/16	5 5/8	6 1/4	7 7/8	8 7/8	11 1/16	11 5/16	11 11/16	13 1/2	14 15/16	18 7/8	21 3/4	25 1/8	31 3/8
Radius	R	2 1/4	2 1/2	2 3/4	3 3/8	4 3/4	5 1/4	5 7/8	6 3/4	9 1/8	9 1/4	9 1/2	11 3/8	12 3/4	16 1/2	19 3/4	22 1/8	28 3/4

For Lists, see page 42.

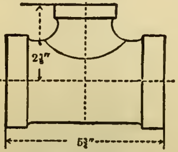
Walworth Extra Heavy Sweep Screwed Fittings.

For 250 lbs. Working Steam Pressure.

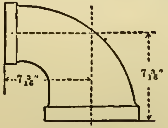
Dimensions of Elbows, Tees, and Crosses—Reducing on Outlet.



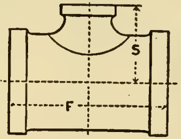
8" × 3" × 2" × 1¼" Cross.

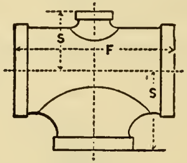


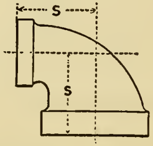
2" × 2" × 1" Tee.



5" × 3" Elbow.







Diameter of Run (R)	¾"	1"	1¼"	1½"	2"	2½"	3"	3½"	4"	4½"	5"	6"	7"	8"	9"	10"	12"
¾"	4⅛ 2 1/16																
1"	4⅜ 2 3/16	4⅜ 2 3/16															
1¼"	4⅞ 2 7/16	5⅛ 2 9/16	5½ 2¾														
1½"	5⅛ 2 9/16	5⅜ 2 9/16	5⅞ 2 15/16	6⅛ 3 1/16													
2"	5½ 2¾	5¾ 2⅞	6⅛ 3 1/16	6⅝ 3 5/16	7½ 3¾												
2½"	5⅞ 2 15/16	6⅛ 3 1/16	6½ 3¼	6⅞ 3 7/16	7⅞ 3 15/16	9¾ 4⅞											
3"		7⅛ 3 9/16	7½ 3¾	8 4	8⅞ 4 7/16	10¾ 5⅜	11¾ 5⅞										
3½"			8 4	8½ 4¼	9⅜ 4 11/16	11⅜ 5 11/16	12¼ 6⅛	12¼ 6⅛									
4"			8½ 4¼	9⅛ 4 9/16	10 5	11⅞ 5 15/16	12⅞ 6 7/16	12⅞ 6 7/16	12⅞ 6 7/16								
4½"				9⅝ 4 13/16	10⅝ 5 5/16	12⅜ 6 3/16	13⅜ 6 11/16	13⅜ 6 11/16	13⅜ 6 11/16	13⅜ 6 11/16							
5"				10⅝ 5 5/16	11½ 5¾	13⅜ 6 11/16	14⅜ 7 3/16	14⅜ 7 3/16	14⅜ 7 3/16	14⅜ 7 3/16	15⅛ 7 9/16						
6"				10½ 5¼	11½ 5¾	13½ 6¾	14¼ 7⅛	14¼ 7⅛	14¼ 7⅛	14¼ 7⅛	15 7½	16 8					
7"					13⅜ 6 11/16	15⅜ 7 11/16	16⅜ 8 3/16	16⅜ 8 3/16	16⅜ 8 3/16	16⅜ 8 3/16	17⅜ 8 11/16	17⅞ 8 15/16	18⅝ 9 5/16				
8"					14½ 7¼	16¼ 8⅛	17¼ 8⅝	17¼ 8⅝	17¼ 8⅝	17¼ 8⅝	18 9	19 9½	19½ 9¾	19¾ 9⅞			
9"						17¼ 8⅝	18 9	18 9	18 9	18 9	19 9½	19¾ 9⅞	20½ 10¼	20¾ 10⅜	22 11		
10"						18½ 9¼	19½ 9¾	19½ 9¾	19½ 9¾	19½ 9¾	19½ 9¾	21¼ 10⅝	21¾ 10⅞	22 11	23½ 11¾	23¾ 11⅞	
12"						20¾ 10⅜	21¾ 10⅞	21¾ 10⅞	21¾ 10⅞	21¾ 10⅞	22½ 11¼	23¼ 11⅝	24 12	24¼ 12⅛	25½ 12¾	25¾ 12⅞	26¼ 13⅛
Diameter of Outlet . . . . . (O)	¾"	1"	1¼"	1½"	2"	2½"	3"	3½"	4"	4½"	5"	6"	7"	8"	9"	10"	12"

For Lists, see page 42.

Table 103.—Continued.

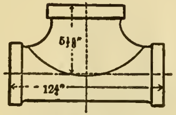
Table 103.—Continued.

Dimensions of Extra Heavy Sweep Screwed Fittings Increasing on Outlet. (Bull Head.)

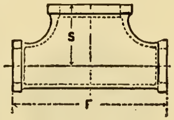
For 250 Lbs. Working Steam Pressure.

Sweep Fittings.

Diameter of Outlet . . . . . . (O) / Diameter of Run (R)	12″	10″	9″	8″	7″	6″	5″	4½″	4″	3½″	3″	2½″	2″	1½″	1¼″	1″	¾″	
¾″													5⅝ 2¾	5⅛ 2 9/16	4¾ 2½	4⅝ 2 3/16	4⅛ 2 1/16	F S
1″												6⅝ 3	5⅞ 2 13/16	5⅝ 2 11/16	5 2⅝	4⅝ 2 5/16		
1¼″											7⅝ 3¾	6⅞ 3¼	6⅝ 3⅛	5⅞ 2 13/16	5½ 2¾			
1½″										8⅝ 4⅛	7⅞ 3⅞	7⅛ 3⅝	6⅝ 3¼	6⅛ 3 1/16				
2″									9¾ 4 15/16	9¼ 4¾	8¾ 4⅞	8 3⅞	7½ 3¾					
2½″								11⅞ 6 3/16	11½ 5 11/16	10⅞ 5⅝	10½ 5⅝	9¾ 4⅞						
3″							14¾ 6 7/16	13¼ 5 15/16	12¾ 5 13/16	12¼ 5⅞	11¾ 5⅞							
3½″						15¾ 7⅛	14¾ 6 15/16	13¼ 6 3/16	12¾ 6 3/16	12¼ 6⅛								
4″					18⅝ 7 11/16	15⅞ 7⅝	14⅞ 6 13/16	13⅝ 6 7/16	12⅞ 6 7/16									
4½″				19⅞ 7⅞	18⅝ 7 15/16	15⅞ 7⅝	14⅞ 7 3/16	13⅝ 6 11/16										
5″			22⅝ 8¾	20⅛ 8¼	18⅞ 8 5/16	16⅛ 8	14⅛ 7 9/16											
6″		24 9¼	22½ 8⅞	20 8⅞	18¾ 8 3/16	16 8												
7″	26⅝ 10⅝	23⅞ 10¼	22⅝ 9⅞	19⅞ 9⅝	18⅝ 9 5/16													
8″	26¼ 10⅞	23⅜ 10¾	22¼ 10¼	19¾ 9⅞														
9″	26 11½	23⅛ 11⅝	22 11															
10″	26¼ 12⅛	23¾ 11⅞																
12″	26¼ 13⅛																	



3″ × 4″ Tee.



For Lists, see page 42.

PRICE LIST

OF

EXTRA HEAVY SCREWED SWEEP FITTINGS.

WORKING STEAM PRESSURE 250 LBS.

TABLE 103.

SIZE	1	1¼	1½	2	2½	3	3½	4	4½	5	6	7	8
ELBOWS	1.55	1.65	2.60	3.20	4.75	6.00	7.60	8.60	11.25	11.25	13.75	19.50	26.00
ELBOWS, REDUCING	1.78	1.90	3.00	3.70	5.45	6.90	8.75	9 90	12 95	12.95	15.80	22.40	32.00
TEES	1.75	1.85	3.00	4.00	5.25	6.60	9.00	10.75	14.50	14.50	18.75	28.60	37.40
TEES, REDUCING	2.00	2.15	3.45	4.60	6.05	7.60	10.35	12.35	16.70	16.70	21.60	32.90	57.50
CROSSES	3.15	3.55	5.40	7.20	9.45	11.90	16.20	19.35	26.10	26.10	32.75	51.50	67.30
CROSSES, REDUCING	3.65	4.10	6.20	8.28	10.86	13 70	18.65	22.25	30.00	30.00	37.65	59.20	77 40
Y BRANCHES	1.05	1.25	2.00	2.65	3 25	4.50	5.75	7.25	....	....	....	....	....
ELBOWS, EXTRA LONG TURN	2.50	2.80	3.60	4.80	8.00	9.00	10.00	11.25	12.50	13.75	17.00	23.00	31.00

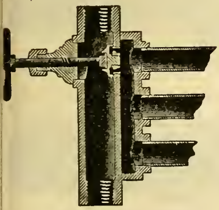
GALVANIZING.

We have recently installed at our factory a **COMPLETE GALVANIZING PLANT,** where we are prepared to galvanize castings of all descriptions; also pipe and tubes of all sizes and lengths.

C. C. WALWORTH'S PATENT MANIFOLDS

WITH

FRINK DISCS.



IG. 44. SINGLE VALVE SUPPLY.

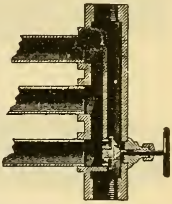


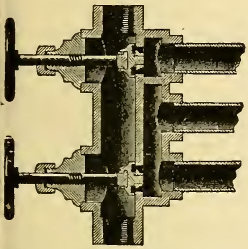
FIG. 44. SINGLE VALVE RETURN.

NOS. 3 SUPPLY AND 6 RETURN. FIG. 44.

One inch outlets, 2½ centre to centre.
Supply inlets, 1½. Return inlets, 1¼.

No. Branches,	2	3	4	5	6	8
No. 3 Supply, No. 6 Return,	3.25 2.75	3.50 2.90	3.75 3.10	4.00 3.35	4.50 3.75	4.75 4.25

All with Frink Discs.
Manifolds with additional number of branches made to order.



IG. 45. DOUBLE VALVE SUPPLY.

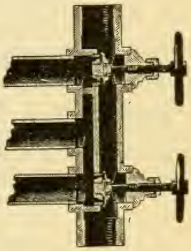


FIG. 45. DOUBLE VALVE RETURN.

NOS. 1 SUPPLY AND 4 RETURN. FIG. 45.

One inch outlets, 2½ centre to centre.
Supply inlets, 1½. Return inlets, 1¼.

No. Branches,	2	3	4	5	6	8
No. 1 Supply, No. 4. Return,	4.75 3.75	5.00 4.00	5.25 4.25	5.50 4.50	6.00 4.75	6.50 5.25

All with Frink Discs.

NOS. 2 SUPPLY AND 5 RETURN. FIG. 45.

1¼ outlets, 3 inches centre to centre.
Supply inlets, 2½. Return inlets, 2.

No. Branches,	2	3	4	5	6	8
No. 2 Supply, ...	7.75	8.00	8.25	8.75	9.50	9.75
No. 5 Return, ...	5.00	5.25	5.50	5.75	6.25	6.75

All with Frink Discs.

The Walworth Manifold combining, as it does, the main pipe, branch tee, and valve in one fitting, dispenses with several joints and valves always necessary when using the old style branch tee. By the use of the Walworth Manifold the circulation can be perfectly and readily controlled through all or a portion of the coil, thus securing the greatest possible economy, and the advantage of an even temperature. As we furnish all these Manifolds with Frink Discs, repairs are easily and quickly made.

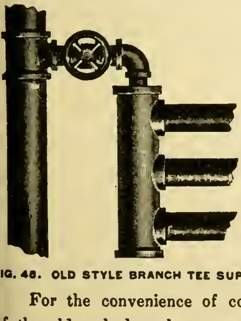


FIG. 46. OLD STYLE BRANCH TEE SUPPLY.

For the convenience of comparison we show herewith cuts (Figs. 46) of the old style branch tee, supply and return.

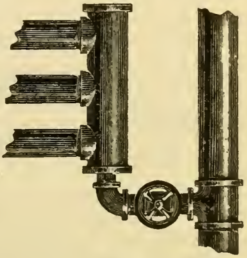


FIG. 46. OLD STYLE BRANCH TEE RETURN.

BRANCH TEES.

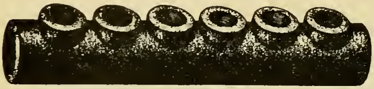


FIG. 47. STYLE A.

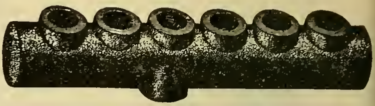


FIG. 47. STYLE B.

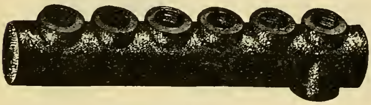


FIG. 47. STYLE C.

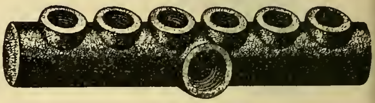


FIG. 47. STYLE D.

BRANCH TEES, NO. 1.—FIG. 47.

1 3-4 INSIDE DIAMETER, 2 1-2 CENTRE TO CENTRE, FOR 3-4 IN. PIPE.

NO. BRANCHES	2	3	4	5	6	7	8	9	10	12
WITH 1 OR 1 1-4 IN. RUN	.70	.80	.95	1.10	1.35	2.05	2.35	2.55	2.85	3.75

BRANCH TEES, NO. 2.—FIG. 47.

1 3-4 INSIDE DIAMETER, 2 1-2 CENTRE TO CENTRE, FOR 1 IN. PIPE.

NO. BRANCHES	2	3	4	5	6	7	8	9	10	12
WITH 1 OR 1 1-4 IN. RUN	.90	1.05	1.15	1.35	1.60	1.90	2.20	2.65	3.15	4.40

BRANCH TEES, NO. 3.—FIG. 47.

2 1-2 INSIDE DIAMETER, 2 1-2 CENTRE TO CENTRE, FOR 1 IN. PIPE.

NO. BRANCHES	2	3	4	5	6	7	8	9	10	12
WITH 1 1-2 IN. RUN	1.00	1.15	1.30	1.45	1.75	2.20	2.45	2.90	3.30	4.75

BRANCH TEES, NO. 4.—FIG. 47.

2 7-8 INSIDE DIAMETER, 2 1-2 CENTRE TO CENTRE, FOR 1 IN. PIPE.

NO. BRANCHES	2	3	4	5	6	7	8	9	10	12
WITH 2 IN. RUN	1.15	1.35	1.60	1.85	2.10	2.45	2.75	3.40	4.00	5.10
WITH 2 1-2 IN. RUN	1.75	2.05	2.40	2.75	3.10	3.50	3.75	4.30	5.00	5.85

All above prices are for Style A Tees.

Back or Side Outlets are charged as additional Front Outlets. When not otherwise ordered, all op ings are tapped right-hand.

Back or Side Outlets larger than the size of run will add 50 per cent. to above prices.

BRANCH TEES.—CONTINUED.

BRANCH TEES, NO. 5.—FIG. 47.

2 3-8 INSIDE DIAMETER, 3 CENTRE TO CENTRE, FOR 1 1-4 IN. PIPE.

NO. BRANCHES	2	3	4	5	6	7	8	9	10	12
WITH 1 1-4 OR 1 1-2 IN. RUN	1.30	1.65	2.00	2.40	2.80	3.20	3.60	4.30	4.80	5.25

BRANCH TEES, NO. 6.—FIG. 47.

2 7-8 INSIDE DIAMETER, 3 CENTRE TO CENTRE, FOR 1 1-4 IN. PIPE.

NO. BRANCHES	2	3	4	5	6	7	8	9	10	12
WITH 2 IN. RUN	1.50	1.90	2.40	2.90	3.30	3.90	4.50	5.25	5.85	6.50

BRANCH TEES, NO. 7.—FIG. 47.

3 INSIDE DIAMETER, 3 CENTRE TO CENTRE, FOR 1 1-4 IN. PIPE.

NO. BRANCHES	2	3	4	5	6	7	8	9	10	12
WITH 2 1-2 IN. RUN	1.95	2.40	2.85	3.55	3.95	4.20	4.95	6.15	6.85	7.65

BRANCH TEES, NO. 8.—FIG. 47.

3 1-2 CENTRE TO CENTRE, FOR 1 1-2 INCH PIPE.

NO. BRANCHES	2	3	4	5	6	7	8	9	10	12
WITH 1 1-2 IN. OR 2 IN. RUN	2.10	2.70	3.35	4.00	4.65	5.25	5.85	6.50	7.60	8.50
WITH 2 1-2 IN. RUN	2.85	3.45	4.15	5.00	5.75	6.50	7.00	8.25	9.25	10.50

BRANCH TEES, NO. 9.—FIG. 47.

4 1-2 CENTRE TO CENTRE, FOR 2 IN. PIPE.

NO. BRANCHES	2	3	4	5	6	7	8	9	10	12
WITH 2 IN. RUN	4.10	5.25	6.40	7.65	8.80	10.60	11.50	12.25	13.50	15.00
WITH 2 1-2 IN. RUN	4.50	5.75	7.00	8.50	9.75	11.75	12.75	13.50	15.00	16.50

All above prices are for Style A Tees.

Back or Side Outlets, as shown by Styles B, C, and D, are charged as additional Front Outlets. When not otherwise ordered, all openings are tapped right hand.

Back or Side Outlets larger than the size of run will add 50 per cent. to above prices.

HOOK PLATES.

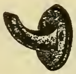


FIG. 48. SHORT SHANK HOOK.

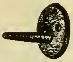


FIG. 49 EXPANSION HOOK.

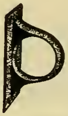


FIG. 50. RING HOOK.

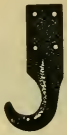


FIG. 51. BEAM HOOK.

HOOKS.—FIGS. 48, 49, 50 AND 51.

SIZE PIPE	½	¾	1	1¼	1½	2	2½	3
FIG. 48. SHORT SHANK HOOKS	....	.08	.09	.10	.15	.22	.35	....
FIG. 49. EXPANSION HOOKS	....	.12	.15	.17	.25	.32	.45	....
FIG. 50. RING HOOKS	....	.16	.16	.21	.31	....	....	....
FIG. 51. BEAM HOOKS	.13	.15	.18	.22	.24	.35	.65	.90

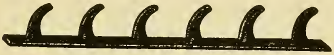


FIG. 52. HOOK PLATE.

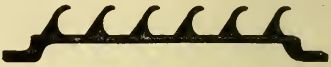


FIG. 53. OFFSET HOOK PLATE.

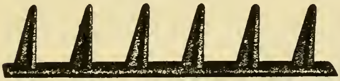


FIG. 54. EXPANSION PLATE.

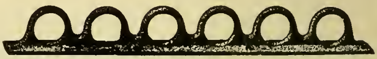
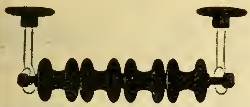


FIG. 55. RING PLATE.

HOOK PLATES.—FIGS. 52 TO 55.

NUMBER OF HOOKS		2	3	4	5	6	7	8	9	10	12
HOOK PLATES. FIG. 52.	For ¾ Pipe, 2½ Centre to Centre	.16	.21	.24	.28	.34	.40	.45	.50	.56	.72
	For 1 „ 2½ „ „	.18	.23	.26	.32	.38	.48	.59	.65	.70	1.00
	For 1¼ „ 3 „ „	.21	.27	.32	.41	.52	.68	.80	.90	1.20	1.40
	For 1½ „ 3½ „ „	.28	.43	.58	.72	.88	1.10	1.25	1.40	1.55	1.90
	For 2 „ 4½ „ „	.43	.65	.90	1.15	1.35	....	....	....	....	....
OFFSET HOOK PLATES. FIG. 53.	For 1¼ Pipe, to Offset 1½ inches	.84	1.10	1.40	1.80	2.25	2.50	2.80	....	....	....
	For 1¼ „ „ „ 3 „	1.10	1.70	1.95	2.25	2.50	2.80	3.35	....	....	....
	For 1¼ „ „ „ 4 „	1.70	1.95	2.25	2.50	2.80	....	....	....	....	....
EXPANSION HOOK PLATES. FIG. 54.	For ¾ Pipe, 2½ Centre to Centre	.23	.34	.45	.55	.65	.77	.90	1.05	1.25	1.65
	For 1 „ 2½ „ „	.25	.35	.50	.60	.70	.80	.95	1.10	1.35	1.70
	For 1¼ „ 3 „ „	.27	.40	.60	.70	.80	.90	1.15	1.30	1.50	2.00
	For 1½ „ 3½ „ „	.40	.60	.75	.90	1.00	....	....	....	....	....
	For 2 „ 4½ „ „	.60	.85	1.00	1.35	1.55	2.00	2.45	....	....	....
RING PLATES. FIG. 55.	For 1 Pipe, 2½ Centre to Centre	.28	.41	.50	.62	.72	.96	1.00	1.20	1.30	....
	For 1¼ „ 3 „ „	.35	.50	.62	.75	1.10	1.25	1.40	....	....	....

PIPE HANGERS.



G. 56. HANGER ROLLS, 2" AND SMALLER.

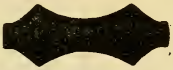


FIG. 56. HANGER ROLLS, 2 1-2" AND LARGER.

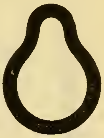


FIG. 57. PIPE RING.

HANGER ROLLS.—FIG. 56.

2" AND SMALLER.

NO. OF PIPES	1	2	3	4	5	6
FOR 1" PIPE, 2½" CENTRE TO CENTRE ....EACH	.06	.12	.18	.24	.30	.36
FOR 1¼" PIPE, 3" CENTRE TO CENTRE..........EACH	.07	.14	.21	.28	.35	.42
FOR 1½" PIPE, 3" CENTRE TO CENTRE..........EACH	.08	.16	.24	.32	.40	.48
FOR 2" PIPE, 3¼" CENTRE TO CENTRE..........EACH	.13	.26	.39	.52	.65	.78

Above prices for Rolls only, without Rods, Bolts or Flanges.

SPECIAL FLANGES TAPPED FOR $\frac{9}{16}$ RODS AND DRILLED FOR SCREWS, EACH 10 CENTS.

HANGER ROLLS.—FIG. 56.

2 1-2" AND LARGER.

SIZE	2½	3	3½	4	4½	5	6	7	8	10	12	14
LENGTH END TO END	4¾	4¾	5½	5½	6	6	7¾	8	9	11½	14	17½
WEIGHT	2	2	3½	3½	4	4	4½	6	7¼	12	17½	22
EACH	.15	.18	.21	.21	.24	.24	.27	.36	.44	.72	1.05	1.32

MALLEABLE PIPE RINGS.—FIG. 57.

SIZE	¾	1	1¼	1½	2	2½	3	3½	4	4½	5	6	7	8
WEIGHT PER 100	9¼	15¾	18	28	35	39	49½	71	84½	91	100	...	....	...
EACH	.02	.03	.03	.04	.05	.06	.08	.12	.15	.20	.25	.40	.50	.60

7 and 8 inch Wrought Iron.

COIL STANDS.—FIG. 58.

FOR 1" PIPE.

NO. PIPES	4	6	8	10	12
WEIGHT PER PAIR	5	7	9	10	16½
PER PAIR	.30	.42	.54	.60	1.00

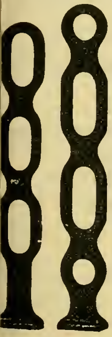


FIG. 58.
COIL STAND.

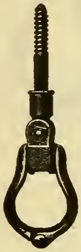


FIG. 60 A.

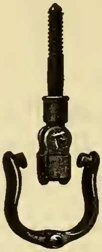


FIG. 60 A.

RUTZLER HANGERS.

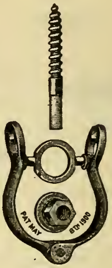


FIG. 61 A.

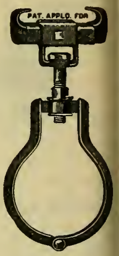


FIG. 61 B.

COLLINS HANGERS.

RUTZLER AND COLLINS PIPE HANGERS.—FIGS. 60 A AND 61 A AND 61 B.

SIZE	¾	1	1¼	1½	2	2½	3	3½	4	4½	5	6	7	8
FIG. 60 A	.18	.18	.20	.22	.25	.30	.35	.45	.50	.55	.60	.75	1.15	1.25
FIG. 61 A	.18	.20	.23	.25	.28	.33	.39	.49	.55	....	.65	.79	1.25	1.35
FIG. 61 B WITH CLAMP	.78	.80	.83	.85	.88	.93	.99	1.09	1.15	....	1.25	1.39	1.85	1.95

BEAM CLAMPS.

No. 1 for Beams, 2″ to 6″, $0.60. No. 2 for Beams, 7″ to 12″, $1.00.

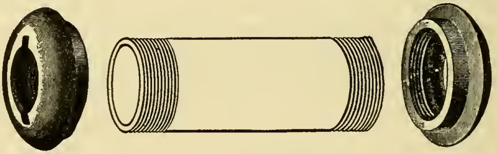


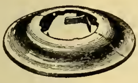
FIG. 62 A. HALL THIMBLES.

HALL CAST IRON THIMBLES.—FIG. 62 A.

For protecting steam pipes where they pass through ceilings or partitions. The thimbles are tapped for pipe for use with ordinary nipples, which can be cut to the requisite length. The price list below covers the thimbles only.

THIMBLES TAPPED FOR PIPE	1″	1¼″	1½″	2″	2½″
TO PASS PIPES	½″	½ or ¾″	¾ or 1″	1 or 1¼″	2″
PLAIN, PER SET (2)	.38	.38	.44	.52	.56
PLAIN, NICKEL PLATED, PER SET (2)	.41	.41	.47	.56	.61
FINISHED AND NICKEL PLATED, PER SET (2)	.71	.71	.92	1.25	1.35

NOTE.—In ordering, give size thimbles are to be tapped; also size of pipe to be passed through th thimbles.



63. BEATON CEILING AND FLOOR PLATE.

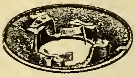


FIG. 63 A. INSIDE VIEW.

BEATON CEILING AND FLOOR PLATES.

SIZE	½	¾	1	1¼	1½	2	2½	3	3½	4	5	6
PLAIN, EACH	.14	.14	.18	.20	24	.28	.43	60	.90	1.25	1 60	2.00
NICKEL PLATED, EACH	.25	.25	.28	32	.35	38	52	75	1.10	1.50	2.00	2.50

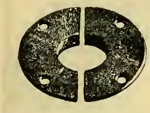


FIG. 64. FLOOR PLATE IN HALVES.

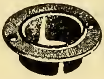


FIG. 65. FLOOR PLATE WITH GROOVE.

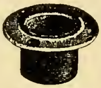


FIG. 66. FLOOR PLATE CAST WHOLE.

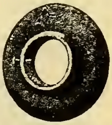


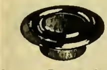
FIG 67 CEILING PLATE.

FLOOR PLATES.—FIGS. 64, 65, AND 66.

SIZE	½	¾	1	1¼	1½	2	2½	3	3½	4	4½	5	6
FIG. 64. FIG. 65. EACH FIG. 66.	.06	.06	.08	.11	.14	.16	.24	.30	.35	.42	.50	.60	.75

CEILING PLATES.—FIG. 67.

SIZE	½	¾	1	1¼	1½	2	2½	3	3½	4	4½	5	6
EACH	.11	.13	.16	.18	.23	.27	.36	.50	.55	.68	....	.95	1 25



G 68. FLOOR PLATE.

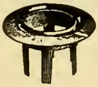


FIG. 69. CEILING PLATE.

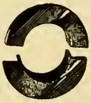


FIG. 70. FLOOR PLATE.

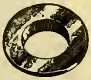


FIG 71. FLOOR PLATE.

STAMPED BRASS NICKEL-PLATED FLOOR AND CEILING PLATES.

FIGS. 68 AND 69.

SIZE	¼	⅜	½	¾	1	1¼	1½	2	2½	3
FIG. 68 OR 69, EACH	.08	.08	.09	.10	.11	.12	.13	.15	.75	1.00

CAST-BRASS FLOOR PLATES.—FIGS. 70 AND 71.

NICKEL PLATED. CAST IN HALVES OR CAST WHOLE.

SIZE	½	¾	1	1¼	1½	2	....	....
FIG. 70 OR 71	.64	.72	80	1.00	1.40	1.80	. ..	....

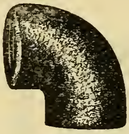


FIG. 72. GAS ELBOW.

MALLEABLE FITTINGS.

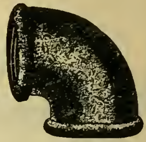


FIG. 73 BEADED ELBOW.

ELBOWS. — FIGS. 72 AND 73.

SIZE	⅛	¼	⅜	½	¾	1	1¼	1½	2	2½	3	3½	4
PLAIN, EACH	.04	.04	.06	.10	.15	.22	.25	.35	.50	.80	1.50	2.25	3.00
GALVANIZED, EACH,	....	.05	.08	.14	.20	.32	.40	.60	.90	1.35	2.60	3.75	5.00

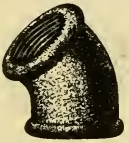


FIG. 74. 45° ELBOW.

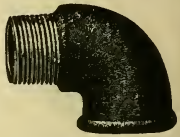


FIG. 75. STREET ELBOW

ELBOWS, 45° — FIG. 74.

SIZE	⅜	½	¾	1	1¼	1½	2	2½
PLAIN, EACH	.10	.12	.18	.26	.36	.54	.82	1.60
GALVANIZED, EACH,	.15	.20	.25	.40	.50	.85	1.35	2.25

STREET ELBOWS. — FIG. 75.

SIZE	⅜	½	¾	1	1¼	1½	2
PLAIN, EACH	.10	.12	.20	.25	.40	.55	.90
GALVANIZED, EACH	.12	.15	.28	.35	.55	.80	1.30

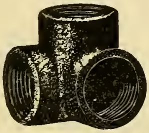


FIG. 76. SIDE OUTLET ELBOW.

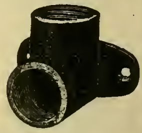


FIG. 77. DROP ELBOW.

SIDE OUTLET ELBOWS. — FIG. 76.

SIZE	⅜	½	¾	1	1¼	1½
PLAIN, EACH	.08	.10	.18	.30	.45	.60
GALVANIZED, EACH	.10	.15	.24	.45	.70	1.10

DROP ELBOWS. — FIG. 77.

SIZE	¼	⅜	½	¾	1
PLAIN, EACH	.06	.08	.12	.20	.25
GALVANIZED, EACH	....	.12	.20	.35	.40

Enameled fittings same list as galvanized.

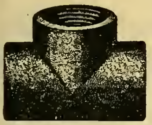


FIG. 78 GAS TEE

MALLEABLE FITTINGS.

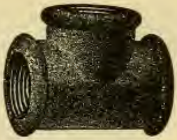
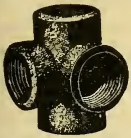


FIG. 79 BEADED TEE.

TEES. — FIGS. 78 AND 79.

SIZE	⅛	¼	⅜	½	¾	1	1¼	1½	2	2½	3	3½	4
PLAIN, EACH	.07	.07	.08	.11	.15	.25	.30	.45	.60	1.05	1.70	2.50	3.40
GALVANIZED, EACH	....	....	.10	.16	.20	.38	.50	.70	1.00	1.90	3.00	4.25	5.75



IG. 80. SIDE OUTLET TEE

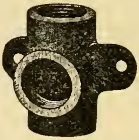


FIG. 81. DROP TEE.

SIDE OUTLET TEES.—FIG. 80.

SIZE	½	¾	1	1¼	1½
PLAIN, EACH	.14	.20	.35	.50	.80
GALVANIZED, EACH	.21	.30	.55	.75	1.20

DROP TEES.—FIG. 81.

SIZE	¼	⅜	½	¾	1
PLAIN, EACH	.08	.10	.14	.22	.30
GALVANIZED, EACH	....	.15	.25	.40	.55

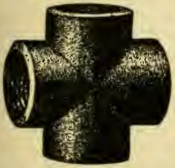


FIG. 82. GAS CROSS.

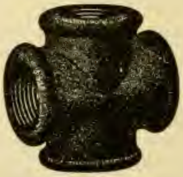


FIG. 83. BEADED CROSS.

CROSSES. — FIGS. 82 AND 83.

SIZE	¼	⅜	½	¾	1	1¼	1½	2	2½	3	3½	4
PLAIN, EACH	.08	.10	.12	.20	.30	.40	.60	1.00	1.75	3.00	3.25	5.25
GALVANIZED, EACH	....	.15	.17	.25	.45	.60	.90	1.50	2.75	4.25	5.00	8.00

Enameled fittings same list as galvanized.

MALLEABLE FITTINGS.

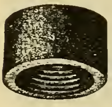


FIG 84 CAP.

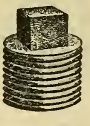


FIG. 85. PLUG.

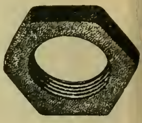


FIG. 86. LOCKNUT

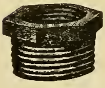


FIG. 87 BUSHING.

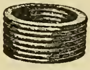


FIG. 88. FACED BUSHING.

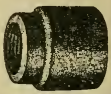


FIG. 89. REDUCING COUPLING.

CAPS.—FIG. 84.

SIZE	¼	⅜	½	¾	1	1¼	1½	2	2½	3	3½	4
PLAIN, EACH	.03	.04	.05	.08	.12	.16	.24	.32	.45	.85	1.50	2.00
GALVANIZED, EACH	.04	.05	.08	.12	.17	.24	.38	.52	.76	1.30	2.25	3.00

PLUGS.—FIG. 85.

SIZE	¼	⅜	½	¾	1	1¼	1½	2
PLAIN, EACH	.03	.03	.05	.08	.10	.16	.19	.30

LOCKNUTS.—FIG. 86.

SIZE	¼	⅜	½	¾	1	1¼	1½	2	2½	3
PLAIN, EACH	.02	.03	.04	.05	.07	.09	.11	.18	.40	.50
GALVANIZED, EACH	.03	.04	.05	.07	.10	.14	.20	.30	.55	.70

BUSHINGS.—FIG. 87.

SIZE	⅜	½	¾	1	1¼	1½	2	2½
PLAIN, EACH	.04	.04	.05	.06	.07	.09	.14	.21
GALVANIZED, EACH	.08	.08	.10	.12	.14	.18	.28	.42

FACED BUSHINGS.—FIG. 88.

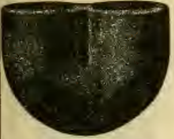
SIZE	⅜	½	¾	1	1¼	1½	2	2½	3
PLAIN, EACH	.08	.09	.11	.13	.17	.22	.32	.48	.70

REDUCING COUPLINGS.—FIG. 89.

SIZE	¼	⅜	½	¾	1	1¼	1½	2	2½	3	3½	4
PLAIN, EACH	.03	.03	.05	.10	.16	.20	.28	.45	.70	1.00	1.50	1.85
GALVANIZED, EACH	....	.05	.08	.15	.25	.85	.45	.75	1.05	1.65	2.40	3.05

Enamelled Fittings same list as Galvanized.

MALLEABLE FITTINGS.



IG. 90. CLOSE PATTERN—RETURN BEND.

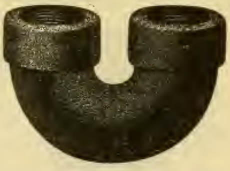


FIG. 91. OPEN PATTERN—RETURN BEND.

RETURN BENDS—CLOSE PATTERN.—FIG. 90.

SIZE	½	¾	1	1¼	1½	2
CENTRE TO CENTRE	$\frac{15}{16}$	$1\frac{3}{16}$	1½	1¾	$2\frac{3}{16}$	2⅝
RIGHT-HAND, PLAIN. EACH	.13	.25	.35	.50	.75	1.00
RIGHT AND LEFT, PLAIN. EACH	.15	.30	.45	.60	.90	1.25
RIGHT-HAND, GALVANIZED. EACH	.25	.35	.55	.75	1.15	1.65

RETURN BENDS—OPEN PATTERN.—FIG. 91.

SIZE	½	¾	1	1¼	1½	2	2½
CENTRE TO CENTRE	1⅝	2	2⅜	2⅞	3¼	4	4⅞
RIGHT-HAND, PLAIN. EACH	.15	.30	.50	.65	.85	1.25	2.00
RIGHT AND LEFT, PLAIN. EACH	.20	.38	.60	.80	1.05	1.55	2.50

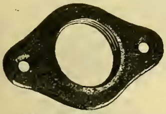


FIG. 92. WASTE NUT.

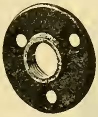


FIG. 93. WASTE NUT.

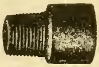


FIG. 94. EXTENSION PIECE.

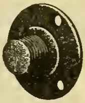


FIG. 95. WALL BRACKET.

WASTE NUTS, ETC.—FIGS. 91, 92, 93 AND 94.

SIZE	¼	⅜	½	¾	1
OVAL WASTE NUTS, PLAIN. FIG. 92, EACH	.04	.05	.06	.08	.10
” ” ” GALVANIZED. FIG. 92, EACH	.06	.08	.10	.15	.20
ROUND WASTE NUTS, PLAIN. FIG. 93, EACH	....	.05	....	....	....
EXTENSION PIECES, PLAIN. FIG. 94, EACH	....	.04	.06	.10	.13
WALL BRACKETS, PLAIN. FIG. 95, EACH	....	.05	....	....	....

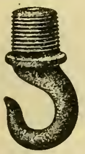


FIG. 96. CHANDELIER HOOK.

FIG. 97. CHANDELIER LOOP.

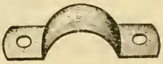


FIG. 98. TINNED STRAP.

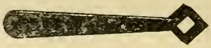


FIG. 98 B. GAS COCK WRENCH.

CHANDELIER HOOKS, ETC.

SIZE	¼	⅜	½	¾	1	1¼	1½
CHANDELIER HOOKS OR LOOPS. FIGS. 96 AND 97	....	.10	.12	....	....	....	....
MALLEABLE STRAPS, TINNED. FIG. 98	.01	.01	.01	.02	.02½	.03	.04

GAS COCK WRENCHES.—FIG. 98 B.

No.	0	1	2	3	3½	4	4½	5	5½	6	6½	7	7½	8	8½	9	10	11	12
Size Nut.	$\frac{8}{32}$	$\frac{11}{32}$	$\frac{12}{32}$	$\frac{15}{32}$	$\frac{17}{32}$	$\frac{20}{32}$	$\frac{22}{32}$	$\frac{23}{32}$	$\frac{24}{32}$	$\frac{26}{32}$	$\frac{28}{32}$	$\frac{30}{32}$	$1\frac{1}{32}$	$1\frac{3}{32}$	$1\frac{6}{32}$	$1\frac{10}{32}$	$1\frac{16}{32}$	$1\frac{23}{32}$	$1\frac{27}{32}$
Each.	.02	.02	.02	.03½	.03½	.04½	.06½	.07½	.08	.11½	.11½	.15½	.17	.24	.24	.30	.32	.34	.38

MALLEABLE FITTINGS.

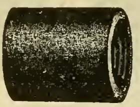


FIG. 99. RIGHT-HAND COUPLING.

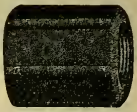


FIG. 100. RIGHT AND LEFT COUPLIN

MALLEABLE COUPLINGS, RIGHT-HAND.—FIG. 99.

SIZE	⅛	¼	⅜	½	¾	1	1¼	1½	2
PLAIN, EACH	.03	.03	.04	.07	.10	.14	.20	.25	.35
GALVANIZED, EACH	...	.05	.07	.10	.17	.23	.30	.40	.55

MALLEABLE COUPLINGS, RIGHT AND LEFT.—FIG. 100.

SIZE	¼	⅜	½	¾	1	1¼	1½	2
PLAIN, EACH	.04	.05	.08	.12	.16	.25	.36	.52
GALVANIZED, EACH	.06	.08	.10	.17	.25	.35	.55	.75

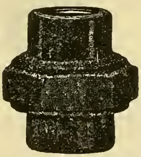


FIG. 101. MALLEABLE UNION.

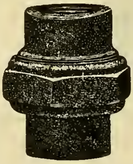


FIG. 102. AMERICAN UNION.

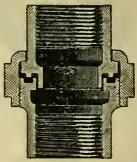


FIG. 102. SECTIONAL VIEW.

MALLEABLE UNIONS.—FIG. 101.

SIZE	⅛	¼	⅜	½	¾	1	1¼	1½	2	2½	3	3½	4
PLAIN, EACH	.18	.18	.20	.22	.27	.33	.46	.58	.75	1.55	2.10	3.65	4.3
GALVANIZED, EACH	.27	.27	.30	.33	.40	.50	.70	.90	1.15	2.35	3.15	5.50	6.5

AMERICAN UNIONS.—FIG. 102.

SIZE	¼	⅜	½	¾	1	1¼	1½	2	2½	3
PLAIN, EACH	.20	.24	.28	.35	.40	.56	.80	.95	2.00	2.75
GALVANIZED, EACH	.24	.28	.35	.46	.55	.78	1.12	1.35	2.90	3.75
TINNED, EACH	.30	.33	.45	.55	.65	.90	1.40	1.55	....	....

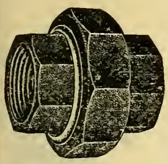


FIG. 102½. DART UNION

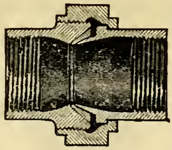


FIG. 102 B. KEYSTONE UNION.

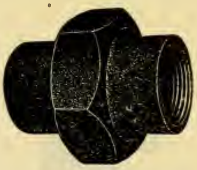
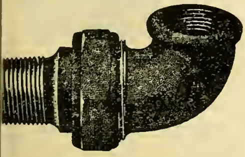


FIG. 102 C. KEWANEE UNION. BRASS AND IRON BALL JOINT.

UNIONS.—FIGS. 102½, 102 B, 102 C.

SIZE	⅛	¼	⅜	½	¾	1	1¼	1½	2	2½	3
DART UNION, EACH	....	.30	.40	.50	.60	.80	1.20	1.60	2.00	3.20	4.80
DART UNION, GALVANIZED, EACH	...	.45	.60	.75	.90	1.20	1.80	2.40	3.00	4.80	6.20
KEYSTONE UNIONS, PLAIN, EACH	....	.20	.24	.28	.35	.40	.56	.80	.95	....	....
KEYSTONE UNIONS, GALVANIZED, EACH	....	.24	.28	.35	.46	.55	.78	1.12	1.35	....	..
KEWANEE PLAIN, EACH	.18	.19	22	.27	40	.48	.66	.80	1.14	2.10	2.65
KEWANEE, GALVANIZED, EACH	22	.23	.26	.34	.49	.60	.82	1.10	1.40	2.75	3.50



G. 103. MALE AND FEMALE UNION ELBOW.

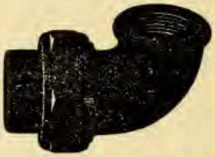
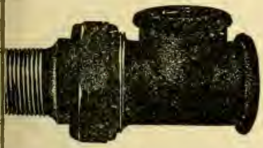


FIG. 104. FEMALE UNION ELBOW.

UNION ELBOWS.—FIGS. 103 AND 104.

SIZE	½	¾	1	1¼	1½	2	2½
MALE AND FEMALE, PLAIN, EACH	.48	.62	.72	1.05	1.20	1.80	3.30
FEMALE, PLAIN, EACH	.42	.54	.63	.90	1.05	1.55	2.85
MALE AND FEMALE, GALVANIZED, EACH	.72	.93	1.08	1.60	1.80	2.70	4.95
FEMALE, GALVANIZED, EACH	.63	.81	.95	1.35	1.58	2.35	4.30



IG. 105. MALE AND FEMALE UNION TEE.

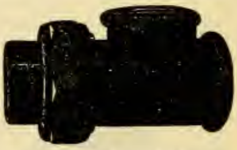


FIG. 106. FEMALE UNION TEE.

UNION TEES.—FIGS. 105 AND 106.

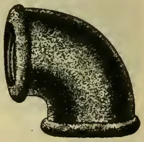
SIZE	½	¾	1	1¼	1½	2	2½
MALE AND FEMALE, PLAIN, EACH	.52	.65	.80	1.10	1.30	1.95	3.70
FEMALE, PLAIN, EACH	.45	.57	.70	.95	1.15	1.70	3.20
MALE AND FEMALE, GALVANIZED, EACH	.78	1.00	1.20	1.65	1.95	2.95	5.55
FEMALE, GALVANIZED, EACH	.68	.86	1.05	1.45	1.75	2.55	4.80

LIST OF SIZES AND WEIGHTS

OF

MALLEABLE FITTINGS.

PLAIN FOR GAS.

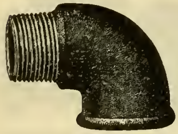


BEADED FOR STEAM.

ELBOWS.

NOTE.—WEIGHTS ON THIS AND FOLLOWING PAGES ARE ONLY APPROXIMATE AND NOT GUARANTEED.

No.	Size.	Weight Plain.	Weight Beaded.		No.	Size.	Weight Plain.	Weight Beaded.
		Lbs. Per 100	Lbs. Per 100.				Lbs. Per 100.	Lbs. Per 100.
1	⅛	8	....	......	25	1½ x ¾	102½	167
2	¼ x ⅛	7½	.....	......	26	1½ x 1	94½	148½
3	¼	8½	10	......	27	1½ x 1¼	101	145
4	⅜ x ⅛	14½	....	......	28	1½	105	143
5	⅜ x ¼	14	16	......	31	2 x 1¼	176	225
6	⅜	15	16	......	31½	2 x 1	....	215
7	½ x ¼	22½	....	......	32	2 x 1½	169	240
8	½ x ⅜	19½	25½	......	33	2	169½	214
9	½	22	23½	......	36	2½ x 1½	....	388
11	¾ x ⅜	31	..	......	37	2½ x 2	....	344
12	¾ x ½	35	40½	......	38	2½	....	407
13	¾	33½	39	......	40	3 x 2	....	438
16	1 x ½	47½	59	......	41	3 x 2½	....	531
17	1 x ¾	45	61½	......	42	3	....	620
18	1	42½	63	......	45	3½ x 3	....	1200
21	1¼ x ¾	83	104½	......	46	3½	....	1000
22	1¼ x 1	88½	97½	......	49	4 x 3½	....	1250
23	1¼	76	99	......	50	4	....	1506
....	......	....	....	......		......	...	....



STREET ELBOWS.

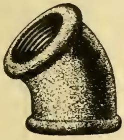
No.	Size	Weight, Beaded.	No.	Size.	Weight, Beaded.
		Lbs. Per 100.			Lbs. Per 100.
59	⅜	16	67	1¼ x 1	107
60	½	26	68	1¼	114
61	¾ x ½	44	71	1½ x 1¼	153
62	¾	47	72	1½	158
64	1 x ¾	72	74	2 x 1½	229
65	1	73	75	2	266

LIST OF SIZES AND WEIGHTS

OF

MALLEABLE FITTINGS.

45° ELBOWS.

	Size.	Weight, Beaded. Lbs. per 100	Size.	Weight. Beaded. Lbs. per 100.
	⅜	12½	1¼	83½
	½	16½	1½	118
	¾	31	2	170
	1	49	2½	

SIDE OUTLET ELBOWS.

No.	Size.	Weight, Plain. Lbs. per 100.	No.	Size.	Weight, Plain. Lbs. per 100.
77	⅜ x ⅜ x ¼	12	87	1 x 1 x ⅜	48
78	⅜ x ⅜ x ⅜	16	88	1 x 1 x ½	49½
80	½ x ½ x ⅜	19½	89	1 x 1 x ¾	51½
81	½ x ½ x ½	29	90	1 x 1 x 1	55½
83	¾ x ¾ x ⅜	37	94	1¼ x 1¼ x 1	87
84	¾ x ¾ x ½	38	95	1¼ x 1¼ x 1¼	91½
85	¾ x ¾ x ¾	40			

Smallest opening is always the side opening.

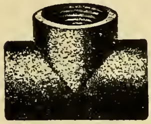
DROP ELBOWS—FEMALE.

	No.	Size.	Weight, Plain. Lbs. per 100.	No.	Size.	Weight. Plain. Lbs. per 100.
	402	¼ x ¼	13	406	½ x ½	27
	403	⅜ x ¼	22	407	¾ x ½	40½
	404	⅜ x ⅜	19	408	¾ x ¾	41½
	405	½ x ⅜	27	410	1 x 1	....

EXTENSION PIECES, MALE AND FEMALE.

	No.	Size.	Weight. Lbs. per 100.	No.	Size.	Weight. Lbs. per 100.
	561	⅜ x ⅜	9½	563	¾ x ¾	22½
	562	½ x ½	15	564	1 x 1	32½

LIST OF SIZES AND WEIGHTS.



PLAIN FOR GAS.

MALLEABLE FITTINGS.

BEADED FOR STEAM.

TEES.

No.	Size.	Weight, Plain.	Weight, Beaded.	No.	Size.	Weight, Plain.	Weight, Beaded.
		Lbs. per 100.	Lbs. per 100.			Lbs. per 100.	Lbs. per 100.
100	⅛	.9	....	156	¾ x ½	34	52
101	⅛ x ¼	8	....	157	¾	41	49
106	¼ x ⅛	9½	...	158	¾ x 1	34	59½
107	¼	12	14½	159	¾ x 1¼	64	....
108	¼ x ⅜	16	....	160	¾ x 1½	69	....
114	⅜ x ¼ x ¼	15	....	161	1 x ⅜ x ½	44½	....
115	⅜ x ¼ x ⅜	18½	....	162	1 x ⅜ x ¾	47½	....
119	⅜ x ⅛	16		163	1 x ⅜ x 1	54	....
120	⅜ x ¼	15	....	164	1 x ⅜ x 1¼	67½	....
121	⅜	16½	17	165	1 x ½ x ⅜	37½	....
122	⅜ x ½	24	....	166	1 x ½ x ½	42	52
123	⅜ x ¾	27	....	167	1 x ½ x ¾	40½	....
124	⅜ x 1	....	...	167½	1 x ¼ x 1	...	....
127	½ x ¼ x ¼	18½	....	168	1 x ½ x 1	48	....
128	½ x ¼ x ½	22.	....	169	1 x ½ x 1¼	68	....
129	½ x ⅜ x ¼	20	....	170	1 x ¾ x ⅜	39½	54
130	½ x ⅜ x ⅜	24½	.....	171	1 x ¾ x ½	44	58
131	½ x ⅜ x ½	26½	....	172	1 x ¾ x ¾	38	65
132	½ x ⅜ x ¾	32½	.....	173	1 x ¾ x 1	49	78
134	½ x ¼	21	....	174	1 x ¾ x 1½	67½	....
135	½ x ⅜	21¾	22½	175	1 x ¼	37	44
136	½	26	28	176	1 x ⅜	35	47
137	½ x ¾	29½	33½	177	1 x ½	41½	44
138	½ x 1	34½	.....	178	1 x ¾	50½	68½
139	½ x 1¼	75	....	179	1	53	75
145	¾ x ⅜ x ⅜	29	....	180	1 x 1¼	60½	96½
146	¾ x ⅜ x ½	35½	....	180½	1 x 1½	109	....
147	¾ x ⅜ x ¾	30½	....	181	1¼ x ⅜ x 1	83	...
148	¾ x ⅜ x 1	50	....	182	1¼ x ⅜ x 1¼	89	....
149	¾ x ½ x ¼	33	....	184	1¼ x ½ x 1	83	....
150	¾ x ½ x ⅜	29	.....	185	1¼ x ½ x 1¼	94	....
151	¾ x ½ x ½	34	38½	188	1¼ x ¾ x ¾	67	86
152	¾ x ½ x ¾	38	49½	189	1¼ x ¾ x 1	72	...
153	¾ x ½ x 1	50½	....	190	1¼ x ¾ x 1¼	89	124
154	¾ x ¼	29½	....	191	1¼ x 1 x ⅜	56	....
155	¾ x ⅜	30½	42	192	1¼ x 1 x ½	47	....

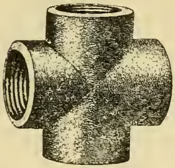
LIST OF SIZES AND WEIGHTS

OF

MALLEABLE FITTINGS.

TEES.—CONTINUED.

No.	Size.	Weight, Plain.	Weight, Beaded.	No.	Size.	Weight, Plain.	Weight, Beaded.
		Lbs. per 100.	Lbs. per 100.			Lbs. per 100.	Lbs. per 100.
193	1¼ x 1 x ¾	65	92	227½	2 x 1¼ x 1¼	172	203
194	1¼ x 1 x 1	74	103	228	2 x 1¼ x 1½	146	232
195	1¼ x 1 x 1¼	92	132	230	2 x 1¼ x 2	203	270
196	1¼ x 1 x 1½	109	....	231	2 x 1½ x 1¼	155	208
197	1¼ x ⅜	63	89	232	2 x 1½ x 1½	169	210
198	1¼ x ½	66	89	233	2 x 1½ x 2	214	264
199	1¼ x ¾	71	96	234	2 x ⅜	118	124
200	1¼ x 1	80	111	235	2 x ½	120	163
201	1¼	90	115	236	2 x ¾	107	165
202	1¼ x 1½	89	102	237	2 x 1	130	175
202½	1¼ x 2	..	206	238	2 x 1¼	152	219
203	1½ x ½ x 1	91	....	239	2 x 1½	154	217
205	1½ x ½ x 1½	113½	....	240	2	197	262
206	1½ x ¾ x 1¼	90	....	249	2 x 2½	....	350
207	1½ x ¾ x 1½	114	176	252	2½ x 1	....	350
209	1½ x 1 x ¾	81	....	253	2½ x 1¼	....	300
210	1½ x 1 x 1	91	....	254	2½ x 1½	....	300
211	1½ x 1 x 1¼	94	....	255	2½ x 2	....	350
212	1½ x 1 x 1½	109	183	256	2½	....	500
214	1½ x 1¼ x ¾	82	....	258	3 x 1	...	450
215	1½ x 1¼ x 1	91	139	265	3 x 1¼	....	450
216	1½ x 1¼ x 1¼	96	164	266	3 x 1½	....	450
217	1½ x 1¼ x 1½	110	174	267	3 x 2	....	500
219	1½ x ⅜	85	114½	268	3 x 2½	....	650
220	1½ x ½	77½	85½	269	3	....	750
221	1½ x ¾	91½	120½	280	3½ x 2½	....	700
222	1½ x 1	102	150	281	3½ x 3	....	850
223	1½ x 1¼	102	155	282	3½	....	1300
224	1½	126	171	291	4 x 2	....	1000
225	1½ x 2	131½	212	292	4 x 2½	....	1100
226	2 x ½ x 2	250	273	293	4 x 3	....	1200
226½	2 x ¾ x 2	203	267	294	4 x 3½	....	1300
227	2 x 1 x 2	221	273	295	4	....	1450



PLAIN FOR GAS.

LIST OF SIZES AND WEIGHTS

OF

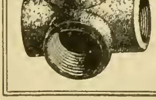
MALLEABLE FITTINGS.

CROSSES.

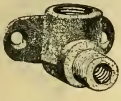
BEADED FOR STEAM.

No.	Size.	Weight, Plain.	Weight, Beaded.	No.	Size.	Weight, Plain.	Weight, Beaded.
		Lbs. per 100.	Lbs. per 100.			Lbs. per 100.	Lbs. per 100.
305	¼	13½	....	361	1¼ x ½	71½	69
312	⅜ x ¼	16	....	362	1¼ x ¾	86	71½
313	⅜	19½	....	363	1¼ x 1	92	85
316	½ x ⅜ x ¼	22	....	364	1¼	100	115
317	½ x ⅜ x ⅜	23½	....	368	1½ x 1¼ x 1¼	92	....
318	½ x ⅜ x ½	25	....	369	1½ x ⅜	85	....
319	½ x ¼	13½	....	370	1½ x ½	87	94
320	½ x ⅜	23½	....	371	1½ x ¾	108	138
321	½	29½	33½	372	1½ x 1	100	167½
328	¾ x ⅜ x ½	34½	....	373	1½ x 1¼	121	155
330	¾ x ½ x ⅜	26	....	374	1½	142	157
331	¾ x ½ x ½	36½	...	379	2 x ½	101	200
334	¾ x ⅜	32	34	380	2 x ¾	122	198
335	¾ x ½	38½	39	381	2 x 1	118	215
336	¾	37½	39	382	2 x 1¼	162	210
340	1 x ½ x ⅜	37	....	383	2 x 1½	149	236
345	1 x ¾ x ⅜	39	....	384	2	218	300
346	1 x ¾ x ½	50½	....	388	2½ x 1½	....	350
347	1 x ¾ x ¾	54½	....	390	2½ x 2	....	400
350	1 x ⅜	42	46	391	2½	....	550
351	1 x ½	32	49	392	3 x 2	..	600
352	1 x ¾	37	58	393	3 x 2½	..	800
353	1	59	79	394	3	....	888
357	1¼ x 1 x ¾	73½	....	396	3½	....	950
358	1¼ x 1 x 1	83	....	397	4	....	1600
360	1¼ x ⅜	65	74	...	....	....	....

SIDE OUTLET TEES.

	No.	Size.	Weight, Plain.	No.	Size.	Weight, Plain.
			Lbs. per 100.			Lbs. per 100.
	96½	½	28½	98	1	56½
	97	¾	46	99	1¼	102

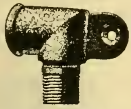
LIST OF SIZES AND WEIGHTS
OF
MALLEABLE FITTINGS.

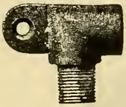

DROP ELBOW.

LONG DROP ELBOW.

DROP ELBOWS — MALE AND FEMALE.

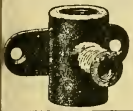
No.	Size.	Weight.	No.	Size.	Weight.
		Lbs. per 100.			Lbs. per 100.
411	⅛ x ⅜	12	414	⅜ x ⅜	21
413	¼ x ⅜	16½	415	½ x ⅜	25½
422 Long Drop.	⅜ x ⅜	26	423 Long Drop.	¼ x ⅜	16


FLANGE RIGHT SIDE.


FLANGE, LEFT SIDE.

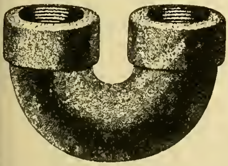
DROP ELBOWS.

No.	Size.	Weight.	No.	Size.	Weight.
		Lbs. per 100.			Lbs. per 100.
431	¼ x ⅜	14½	436	¼ x ⅜	13½
432	⅜ x ⅜	20¼	437	⅜ x ⅜	20¼



DROP TEES — MALE AND FEMALE.

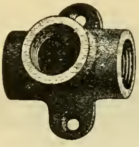
No.	Size.	Weight.	No.	Size.	Weight.	No.	Size	Weight
		Lbs. per 100.			Lbs. per 100.			Lbs. per 100.
471	¼ x ¼ x ⅜	17	475	½ x ½ x ⅜	26	478	1 x ⅜ x ⅜	44
472	⅜ x ¼ x ⅜	14½	476	¾ x ½ x ⅜	33	479	1 x 1 x ⅜	37
473	⅜ x ⅜ x ⅜	18½	477	¾ x ¾ x ⅜	36	480	With drop 2¼ long. ⅜ x ⅜ x ⅜	25½
474	½ x ⅜ x ⅜	18¼						


OPEN PATTERN.

CLOSE PATTERN.

RETURN BENDS.

No	Size.	Weight.	No.	Size.	Weight.	No.	Size.	Weight.	No.	Size.	Weight.
		Lbs. per 100			Lbs per 100			Lbs. per 100			Lbs. per 100
660	½	35	664	1½	251	666	½	30½	669	1¼	152
661	¾	104	665	2	454	667	¾	54	670	1½	228
662	1	134	665½	2½	832	668	1	88	671	2	333
663	1¼	202½	...	...	...	...	...	...	673	3	400



LIST OF SIZES AND WEIGHTS

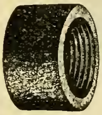
OF

MALLEABLE FITTINGS.

DROP TEES, FEMALE.

No.	Size.	Weight.	No.	Size.	Weight.	No.	Size.	Weight.
		Lbs. per 100.			Lbs. per 100.			Lbs. per 100.
446	¼ x ¼ x ¼	15½	454	½ x ½ x ⅜	16	461	¾ x ¾ x ½	42
447	⅜ x ¼ x ¼	20½	455	½ x ½ x ½	33	462	¾ x ¾ x ¾	49½
449	⅜ x ⅜ x ¼	21	457	¾ x ½ x ¼	31	463	1 x ¾ x ⅜	46
450	⅜ x ⅜ x ⅜	16	458	¾ x ½ x ⅜	37½	466	1 x 1 x ⅜	43
451	½ x ⅜ x ¼	21	459	¾ x ¾ x ¼	35	467	1 x 1 x ½	58
452	½ x ⅜ x ⅜	27	460	¾ x ¾ x ⅜	34	469	1 x 1 x ¾	63
453	½ x ½ x ¼	26½	....	....	....	....	....	....

The smallest size is the size of drop.

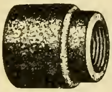


CAPS.

No.	Size.	Weight.	No.	Size.	Weight.
		Lbs. per 100.			Lbs. per 100.
486	¼	5⅙	492	1½	70
487	⅜	8	493	2	97
488	½	11½	494	2½	219
489	¾	19	495	3	350
490	1	30	496	3½	575
491	1¼	40	497	4	782

PLUGS.

No.	Size.	Weight.	No.	Size.	Weight.
		Lbs. per 100.			Lbs. per 100.
503	¼	4½	507	1	25
504	⅜	7	508	1¼	49
505	½	12	509	1½	58½
506	¾	18	510	2	89



REDUCING COUPLINGS.

No.	Size.	Weight.	No.	Size.	Weight.	No.	Size.	Weight.
		Lbs. per 100.			Lbs. per 100.			Lbs. per 100.
519	¼ x ⅛	6½	531	1¼ x 1	53	541	2½ x 1½	250
520	⅜ x ⅛	9	531¼	1½ x ⅜	..	542	2½ x 2	213
521	⅜ x ¼	7½	531½	1½ x ½	68	543	3 x 1	325
522	½ x ¼	12	532	1½ x ¾	69	544	3 x 1¼	338
523	½ x ⅜	14	533	1½ x 1	59	545	3 x 1½	350
523½	¾ x ¼	21	534	1½ x 1¼	70	546	3 x 2	320
524	¾ x ⅜	21	534½	2 x ⅜	85	547	3 x 2½	325
525	¾ x ½	22	534¾	2 x ½	90	549	3½ x 1½	513
525½	1 x ¼	33	535	2 x ¾	102	550	3½ x 2	538
526	1 x ⅜	33	536	2 x 1	125½	551	3½ x 2½	....
527	1 x ½	36	537	2 x 1¼	91	552	3½ x 3	545
528	1 x ¾	31	538	2 x 1½	108½	555	4 x 2	650
528½	1¼ x ⅜	54½	538½	2½ x ¾	225	556	4 x 2½	700
529	1¼ x ½	53	539	2½ x 1	182	557	4 x 3	650
530	1¼ x ¾	47	540	2½ x 1¼	225	558	4 x 3½	682

COUPLINGS RIGHT AND LEFT.

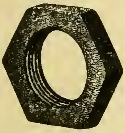
LIST OF SIZES AND WEIGHTS
OF
MALLEABLE FITTINGS.

COUPLINGS RIGHT HAND.

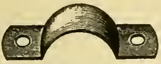
No.	Size.	Weight.	No.	Size.	Weight.
		Lbs.per 100			Lbs.per 100
571	¼	9	575	1	50½
572	⅜	13	576	1¼	72
573	½	17½	577	1½	106
574	¾	29	578	2	152

No.	Size.	Weight.	No.	Size.	Weight.
		Lbs.per 100			Lbs.per 100
587	⅛	4¼	594	1½	80
588	¼	7	595	2	127
589	⅜	10½	596	2½	...
590	½	17	597	3	...
591	¾	25	598	3½	...
592	1	40½	599	4	675
593	1¼	53	...	...	...

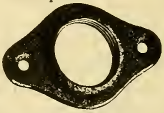
LOCKNUTS.



No.	Size.	Weight.	No.	Size.	Weight.
		Lbs. per 100.			Lbs. per 100.
601	¼	3	606	1¼	27
602	⅜	5½	607	1½	34
603	½	7½	608	2	48¼
604	¾	11½	609	2½	107
605	1	19	610	3	139



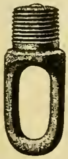
TINNED STRAPS.



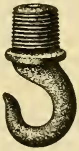
WASTE NUTS, PLAIN OR TINNED.

No.	Size.	Weight.	No.	Size.	Weight.
		Lbs.per 100			Lbs.per 100
614	¼	2	617	¾	9⅞
615	⅜	2½	618	1	13¼
616	½	4⅝	619	1¼	18

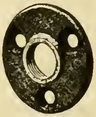
No.	Size.	Weight.	No.	Size.	Weight.
		Lbs.per 100			Lbs.per 100
625	¼	3½	628	¾	9⅞
626	⅜	6	629	1	13¼
627	½	7¾		...	...



CHANDELIER LOOPS.



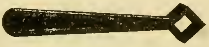
CHANDELIER HOOKS.



WASTE NUTS, PLAIN.

No.	Size.	Weight.	No.	Size.	Weight.
		Lbs.per 100			Lbs.per 100
636	⅜	16⅝	638	⅜	19
637	½	20½	639	½	22⅝

No.	Size.	Weight.	No.	Size.	Weight.
		Lbs.per 100			Lbs.per 100
633	½	7	634	⅜	7½



GAS COCK WRENCHES.

No.	0	1	2	3	3½	4	4¼	5	5½	6	6½	7	7½	8	8½	9	10	11	12
Size Nut	8/32	11/32	12/32	15/32	17/32	20/32	22/32	23/32	24/32	26/32	28/32	30/32	1 1/32	1 3/32	1 6/32	1 10/32	1 16/32	1 23/32	1 27/32

Fig. 645 — 19 Sizes.

REVISED CLASSIFICATION AND PRICE LIST

(SUPERSEDING ALL PREVIOUS CLASSIFICATIONS.)

MALLEABLE IRON, GAS, WATER, AND STEAM FITTINGS.

ADOPTED BY MANUFACTURERS, JUNE 19, 1895.

CLASS A.

Elbows, ⅛, ¼ x ⅛, ⅜ x ⅛.
Tees, ⅛, ⅛ x ¼, ¼ x ⅛, ⅜ x ⅛.
Rod Couplings.
R. and L. Couplings, ⅛ in.
Reducing Couplings, ¼ x ⅛, ⅜ x ⅛.
Couplings, R. H., ⅛.
Ells, R. and L., ¼ and ⅜.
R. and L. Return Bends, ⅜ and ½.
Plugs, and Caps, ⅛.

CLASS B.

Elbows, ¼, ⅜ x ¼, ⅜, ½ x ¼.
Tees, ¼, ¼ x ⅜, ⅜ x ¼ x ¼, ⅜ x ¼ x ⅜, ⅜ x ¼, ⅜.
Elbows, Side Outlet, ½ in. and smaller.
Four-way Tees, ½ in. and smaller.
Street Ells, ¼ and ⅜.
Crosses, ¼, ⅜, and ½ in.
Reducing Crosses, 1 in. and smaller.
Drop Ells and Tees, ½ in. and smaller.
Caps, ¼ and ⅜ in.
Plugs, ¼ and ⅜.
Locknuts, ¼, ⅜, and ½.
Reducing Couplings, ⅜ x ¼ to ¾ x ⅜ inclusive.
Extension Pieces, ⅜ and ½ in.
R. and L. Couplings, ¼ and ⅜.
R. H. Couplings, ¼ and ⅜ in.
R. and L. Elbows, ½ in.
R. and L. Return Bends, ¾ and 1 in.
Waste Nuts, ¾ and smaller.
Chandelier Hooks, all sizes.
Return Bends, ⅜ and ½
Wall Plates, all sizes.
45° Ells, ½ in. and smaller.
Y's, ½ and ¾ in.

CLASS C.

Elbows, ½ x ⅜ and ½.
Tees, ½ and ½ in. reducing.
Elbows, Side Outlet, ¾ and larger.
Street Ells, ½, ¾ x ½, ¾ and 1 x ¾ in.
Crosses, ¾ in. and 1 in. straight.
Drop Ells, ¾ and larger.
Drop Tees, ¾ and larger.
Four-way Tees, ¾ and larger.
Caps, ½, ¾, and 1.
Plugs, ½, ¾, and 1 in.
Locknuts, ¾, 1, and 1¼ in.
Reducing Couplings, ¾ x ½ to 1 in. inclusive.
R. and L. Couplings, ½ and ¾.
R. H. Couplings, ½ and ¾.
Extension Pieces, ¾ and larger.
Waste Nuts, 1 in. and larger.
Return Bends, ¾ and 1 in.
45° Ells, ¾ to 2 in. inclusive.
Y's, 1 in. and larger.
Return Bends, R. and L., 1¼ and larger.
Elbows, R. and L., ¾ and 1 in.

CLASS D.

Elbows and Tees, ¾ and 1 in.
Crosses, 1¼ in. and larger.
Street Ells, 1 in. and larger, and Street Tees.
Caps, 1¼ in. and larger.
Plugs, 1¼ in. and larger.
Locknuts, 1½ in. and larger.
Reducing Couplings, 1¼ in. and larger.
R. H. Couplings, 1 and 1¼ in.
Return Bends, 1¼ in. and larger.
R. and L. Couplings, 1 in. and larger.
45° Elbows, 2½ in. and larger.
Straps, all sizes.
Elbows, R. and L., 1¼, 1½, 2.

Such as have smaller outlets than ¾ in. to be classed as "C."

CLASS E.

Elbows and Tees, 1¼ in. and larger. Such fittings in this class, that have outlets smaller than 1 in., to be classed as "D."

Right-Hand Couplings, 1½ in. and 2 ins.

The run of Tees gives the size for the purpose of classification, and the outlet being larger does not change it.

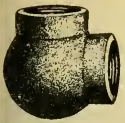


FIG. 107 A.
ELBOW.

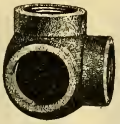


FIG. 107 B.
SIDE OUTLET ELBOW.

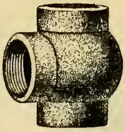


FIG. 107 C.
TEE.

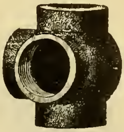


FIG. 107 D.
SIDE OUTLET TEE.

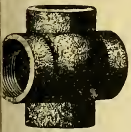


FIG. 107 E.
CROSS.

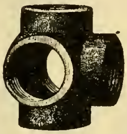


FIG. 107 F.
SIDE OUTLET CROSS.

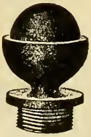


FIG. 107 G.
ORNAMENT.

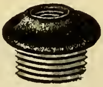


FIG. 107 H.

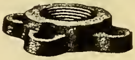


FIG. 107 J. FLANGE.

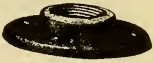


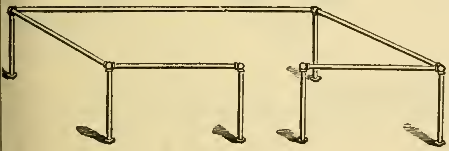
FIG. 108.
CAST-IRON RAILING FLANGE.

MALLEABLE RAILING FITTINGS.—FIG. 107.

SIZE	½	¾	1	1¼	1½	2	2½	3
ELBOW	.15	.18	.20	.35	.45	.72	1.00	1.50
SIDE OUTLET ELBOW	.20	.23	.25	.40	.50	.80	1.15	1.70
TEE	.20	.23	.25	.40	.50	.75	1.20	1.90
SIDE OUTLET TEE	.30	.33	.35	.45	.55	.90	1.40	2.15
CROSS	.30	.33	.35	.45	.58	1.00	1.50	2.25
SIDE OUTLET CROSS	.35	.38	.40	.50	.65	1.35	1.75	2.60
FLANGE	.14	.15	.15	.20	.28	.30	.50	.75
BALL ORNAMENT	.16	.18	.20	.25	.35	.90	1.00	1.50
BUSHING REDUCED ONE AND TWO SIZES	.....	.06	.07	.10	.12	.18	.28	.40

CAST-IRON RAILING FLANGES.—FIG. 108.

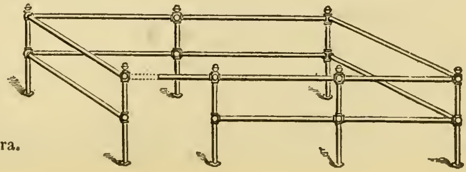
SIZE	⅜	½	¾	1	1¼	1¼	1½	2	2	2½	3
DIAMETER	3	3	3½	4	4	5	5	5	6	7	7½
EACH	.14	.15	.18	.22	.25	.35	.36	.45	.55	.80	1.00



PLEASE READ THIS NOTICE WITH CARE.

To construct a Railing *two* pipes high, the upper outlet of all fittings used in lower pipes should be tapped with *left-hand thread*, but when orders are sent us without specifying how outlets are to be tapped, *all fittings will invariably be furnished right-hand.*

As the Fittings do not need to be steam or water ght, a sufficiently clean thread to screw up well d make a good job can be made by running a *t-hand tap* into any outlet tapped *right-hand.* Right and Left, and Left-hand Fittings, 15% extra.



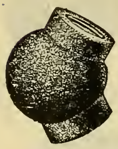


FIG. 108 A.
ELBOW.

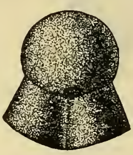


FIG. 108 B.
ELBOW.

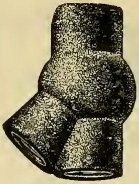


FIG. 108 C.
TEE.

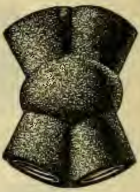


FIG. 108 D.
CROSS.

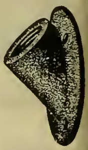


FIG. 108 E.
FLOOR FLANGE.

MALLEABLE 45° ANGLE RAILING FITTINGS.—FIG. 108 A.

SIZE		1	1¼	1½	2	2½	3
ELBOW. FIG. 108 A.	....	.40	.70	.90	1.44	2.00	3.00
ELBOW, SIDE OUTLET. NO CUT	....	.50	.80	1.00	1.60	2.30	3.40
ELBOW. FIG. 108 B	....	.40	.70	.90	1.44	2.00	3.00
ELBOW, SIDE OUTLET. NO CUT	....	.50	.80	1.00	1.60	2.30	3.40
TEE. FIG. 108 C	....	.50	.80	1.00	1.60	2.40	3.80
TEE, SIDE OUTLET. NO CUT	....	.70	.90	1.10	1.80	2.80	4.30
CROSS. FIG. 108 D	....	.70	.90	1.16	2.00	3.00	4.50
CROSS, SIDE OUTLET. NO CUT	....	.80	1.00	1.30	2.70	3.50	5.20
FLOOR FLANGE. FIG. 108 E	....	.30	.40	.56	.60	1.00	1.50

Right and Left, and Left-hand Fittings, 15% extra.

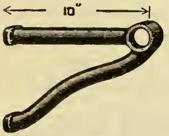


FIG. 108 H.
FOOT RAIL BRACKET.

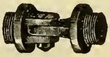


FIG. 108 J.
HINGE.

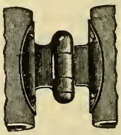


FIG. 108 K.
HINGE.

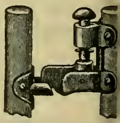


FIG. 108 L.
GATE LATCH.

RAILING FIXTURES.

SIZE	½	¾	1	1¼	1½	2
FOOT RAIL BRACKET. FIG. 108 H	.40	.50	.70	.80	1.00	1.25
HINGE. FIG. 108 J	.35	.40	.45	.55	.80	1.00
HINGE. FIG. 108 K	....	....	.50	.50	.50	.50
GATE LATCH. 108 L	....	....	.65	.65	.65	.65

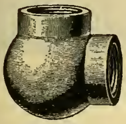


FIG. 108½A.
ELBOW.

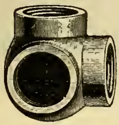


FIG. 108½B.
SIDE OUTLET ELBOW.

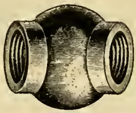


FIG. 108½C.
45° ELBOW.

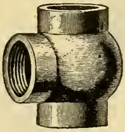


FIG. 108½D.
TEE.

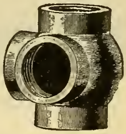


FIG. 108½E.
SIDE OUTLET TEE.

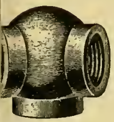


FIG. 108½F.
45° TEE.

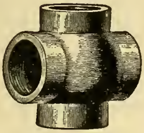


FIG. 108½G.
CROSS.

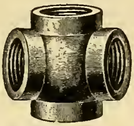


FIG. 108½H.
45° CROSS.

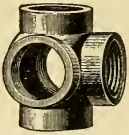


FIG. 108½J.
SIDE OUTLET CROSS.

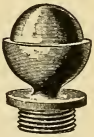


FIG. 108½K.
ORNAMENT.

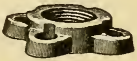


FIG. 108½L. FLANGE.

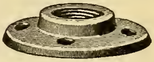


FIG. 108½M.
FLANGE.

FINISHED BRASS RAILING FITTINGS.—FIG. 108½.

SIZE	½	¾	1	1¼	1½	2
ELBOW. FIG. 108½A	.40	.60	.80	1.20	1.60	2.20
SIDE OUTLET ELBOW. FIG. 108½B	.75	1.00	1.45	1.65	2.05	2.90
45° ELBOW. FIG. 108½C	....	....	1.50	1.70	2.15	3.00
TEE. FIG. 108½D	.60	.85	1.10	1.70	2.00	2.75
SIDE OUTLET TEE. FIG. 108½E	1.05	1.25	1.50	2.00	2.30	3.25
45° TEE. FIG. 108½F	....	....	1.55	2.05	2.40	3.35
CROSS. FIG. 108½G	1.05	1.25	1.50	2.00	2.40	3.25
45° CROSS. FIG. 108½H	....	....	1.60	2.20	2.60	3.40
SIDE OUTLET CROSS. FIG. 108½J	1.20	1.45	1.70	2.12	2.60	3.50
ORNAMENT. FIG. 108½K	.40	.65	.80	.90	1.20	2.50
FLANGE. FIG. 108½L	.50	.63	.71	.83	1.10	1.20

FINISHED BRASS FLANGES.—FIG. 108½M.

SIZE PIPE	½	¾	1	1¼	1¼	1½	2	2
DIAMETER	3	3½	4	4	5	5	5	6
EACH	.50	.63	.71	.83	1.05	1.10	1.20	.140

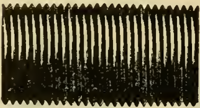


FIG. 109. CLOSE NIPPLE.

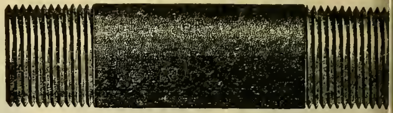


FIG. 110. SHOULDER OR SPACE NIPPLE.

CLOSE NIPPLES.

SIZE	1/8	1/4	3/8	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3	3 1/2
LENGTH	3/4	7/8	1	1 1/8	1 3/8	1 1/2	1 1/2	1 3/4	2	2 1/2	2 1/2	2 3/4
PLAIN, EACH	.04	.04	.04	.05	.06	.08	.11	.13	.18	.39	.48	.75
GALVANIZED, EACH	.06	.06	06	.06	.08	.11	.17	.21	.27	.56	.70	1.20
SIZE	4	4 1/2	5	6	7	8	9	10	12	.. ..	....	...
LENGTH	3	3	3 1/2	3 1/2	4	4	5	5	5	....	....	...
PLAIN, EACH	.85	1.25	1.55	1.85	3.20	3.55	5.25	6.75	8.00	....	....	....
GALVANIZED, EACH	1.35	1.85	2.30	2.80	4.25	5.00	.		.		.	....

SHORT SHOULDER OR SPACE NIPPLES.

SIZE	1/8	1/4	3/8	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3	3 1/2
MAXIMUM LENGTH	1 1/2	1 1/2	1 1/2	1 1/2	2	2	2 1/2	2 1/2	2 1/2	3	3	4
PLAIN, EACH	.04	.04	.04	.05	.06	.08	.11	.13	.18	.39	.48	.75
GALVANIZED, EACH	.06	.06	.06	.06	.08	.11	.17	.21	.27	.56	.70	1.20
SIZE	4	4 1/2	5	6	7	8	9	10	12	..	....	....
MAXIMUM LENGTH	4	4	4 1/2	4 1/2	5	5	6	6	6	..	....	....
PLAIN, EACH	.85	1.25	1.55	1.85	3.20	3.55	5.25	6.75	8,00	....	....	....
GALVANIZED, EACH	1.35	1.85	2.30	2.80	4.25	5.00	....	...	.	. ..	..	....

LONG NIPPLES.

SIZE	1/8	1/4	3/8	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3
MAXIMUM LENGTH	3 1/2	3 1/2	3 1/2	3 1/2	4	4	4 1/2	4 1/2	4 1/2	5	5
PLAIN, EACH	.06	.06	.06	.07	.09	.13	.17	.20	.27	.59	.72
GALVANIZED, EACH	.11	.11	.11	.11	.14	.19	.29	.35	.47	.86	1.10
SIZE	3 1/2	4	4 1/2	5	6	7	8	9	10	12	.
MAXIMUM LENGTH	6	6	6	6 1/2	6 1/2	6 1/2	6 1/2	8	8	8	....
PLAIN, EACH	1.05	1.20	1.70	2.45	2.90	3.60	4.05	6.50	8.25	10.00	...
GALVANIZED, EACH	1.70	1 87	2.60	3.15	4.25	4.95	5.80	. .	. .	.	....

CLOSE OR SHORT NIPPLES, RIGHT AND LEFT. PLAIN.

LENGTHS SAME AS RIGHT HAND.

SIZE	⅛	¼	⅜	½	¾	1	1¼	1½	2	2½	3	3½	4
EACH	.05	.05	.05	07	.08	.11	.15	.18	.24	.52	.65	1.00	1.15

For List on R. and L. Galvanized Nipples add 60% to price of R. and L. Plain Nipples.

LONG NIPPLES, RIGHT AND LEFT.

LENGTHS SAME AS RIGHT HAND.

SIZE	⅛	¼	⅜	½	¾	1	1¼	1½	2	2½	3	3½	4
PLAIN, EACH	.08	.08	.08	.10	.12	18	23	.27	.36	.79	.96	1.40	1.60

For List on R. and L. Galvanized Nipples add 60% to price of R. and L. Plain Nipples.

EXTRA LONG NIPPLES—PLAIN.

LENGTH	4	5	6	7	8	9	10	11	12
Size.									
⅛, ¼, and ⅜	.07	.08	.10	.12	.14	.15	.17	.18	.19
½	.08	.10	.12	.14	.16	.18	.20	.22	.23
¾	....	.11	.13	.17	.18	.20	.22	.24	.26
1	....	.15	.18	.23	.25	.28	.31	.34	.36
1¼	....	.20	.24	.29	.33	.36	.40	.44	.47
1½	....	.25	.29	.36	.40	.45	.50	.54	.59
2	....	.32	.38	.50	.54	.59	.65	.72	.77
2½	....	....	.68	.90	.97	1.06	1.17	1.26	1.35
3	....	....	.85	1.08	1.20	1.33	1.45	1.58	1.70
3½	....	...	....	1.30	1.45	1.60	1.75	1.90	2.05
4	....	....	....	1.52	1.69	1.87	2.05	2.22	2.40
4½	....	....	....	2.25	2.50	2.75	2.95	3.17	3.40
5	....	...	....	2.58	2.83	3.10	3 35	3.60	3.85
6	...	...	...	3.05	3.35	3.70	4.00	4.30	4.65
7	....	...	....	4.05	4.45	4.90	5.30	5.75	6.15
8	....	....	....	4.55	5.05	5.50	6.00	6.50	7.00
9	....	....	....	....	.....	7.10	7.75	8.40	9.00
10	....	....	....	....	....	8.90	9.70	10.40	11.15
11	....	....	....	....	....	....	....	....	....
12	...	...	....	..	...	10.80	11.75	12.70	13.65

Nipples made to order from Extra Heavy Pipe at double above list.

EXTRA LONG NIPPLES, GALVANIZED.

LENGTH ... . Size.	4	5	6	7	8	9	10	11	12
⅛, ¼, and ⅜	.12	.15	.17	.21	.24	.26	.29	.31	.34
½	.13	.16	.18	.23	.26	.28	.31	.33	.36
¾	....	.18	.21	.26	.29	.32	.35	.38	.41
1	....	.24	.28	.34	.38	.42	.47	.51	.55
1¼	....	.32	.38	.45	.51	.57	.63	.69	.75
1½	....	.39	.46	.55	.63	.70	.77	.84	.91
2	....	.52	.61	.74	.83	.93	1.03	1.13	1.23
2½	....	...	1.00	1.26	1.41	1.56	1.71	1.86	2.01
3	....	....	1.30	1.60	1.80	2.00	2.20	2.40	2.60
3½	....	....	....	2.10	2.35	2.60	2.85	3.15	3.40
4	..	....	....	2.30	2.60	2.90	3.20	3.50	3.80
4½	....	....	....	3.30	3.65	4.05	4.45	4.85	5.25
5	....	....	....	3.75	4.20	4.60	5.00	5.40	5.85
6	....	....	....	4.50	5.00	5.55	6.05	6.60	7.15
7	....	....	....	5.65	6.35	7.05	7.75	8.45	9.20
8	....	...	....	6.65	7.50	8.35	9.25	10.10	10.95

For List on R. and L. Galvanized Nipples add 60% to R. and L. Plain Nipples,

EXTRA LONG NIPPLES, RIGHT AND LEFT, PLAIN.

LENGTH.................. Size.	4	5	6	7	8	9	10	11	12
⅛, ¼, and ⅜	.09	.11	.13	.16	.18	.20	.23	.25	.27
½	.11	.13	.16	.18	.21	.24	.27	.29	.31
¾	...	.15	.17	.23	.25	.27	.29	.32	.35
1	....	.20	.24	.31	.33	.37	.41	.45	.48
1¼	....	.27	.32	.39	.45	.50	.55	.60	.65
1½	....	.34	.39	.48	.52	.60	.67	.72	.80
2	....	.43	.51	.67	.72	.80	.87	.96	1.03
2½	....	....	.91	1.20	1.30	1.40	1.55	1.68	1.80
3	....	...	1.13	1.44	1.60	1.77	1.93	2.10	2.27
3½	....	....	....	1.75	1.95	2.15	2.35	2.55	2.75
4	...	....	..	2.00	2.25	2.50	2.75	3.00	3.25

Add 60% to above prices for Galvanized Nipples R. and L.

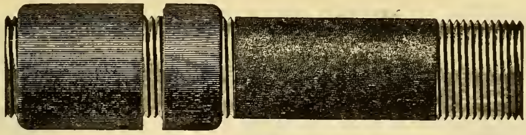


FIG. 111 LONG SCREW.

LONG SCREWS. — FIG. 111.

IZE	¼	⅜	½	¾	1	1¼	1½	2	2½	3	3½	4
ANDARD LENGTH,	3½	4	4½	5	5½	6	6½	7	7½	8	8½	9
AIN, EACH, .	.30	.35	.40	.55	.75	1.00	1.30	1.70	2.70	3.70	5.39	6.60
LVANIZED, EACH,	.35	.40	.50	66	1.00	1.25	1.60	2.10	3.10	4.70	6.50	7.75

EXTRA-LONG LONG SCREWS. — PLAIN.

ENGTH.....	4	5	6	7	8	9	10	11	12
Size. ¼	.32	.34	.36	.38	.40	.42	.44	.46	.48
⅜	....	.37	.40	.42	.44	.46	.48	.50	.52
½	....	.42	.44	.46	.48	.50	.52	.54	.56
¾	....	....	.64	.68	.72	.76	.80	.84	.88
1	....	....	.79	.83	.87	.91	.95	.99	1.03
1¼	....	....	. ..	1.04	1.08	1.12	1,16	1.20	1.24
1½	....	....	....	1.34	1.38	1.42	1.46	1.50	1.54
2	....	....	....	....	1.80	1.90	2.00	2.10	2.20
2½	....	....	....	....	2.80	3.00	3.20	3.40	3.60
3	....	....	....	....	3.90	4.10	4.30	4.50	4.70
3½	....	....	....	....	....	5.63	5.87	6.11	6.35
4	....	....	....	...	. ..	....	7.00	7.40	7.80

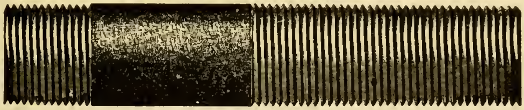


FIG. 112. LOCKNUT NIPPLE.

LOCKNUT NIPPLES. — PLAIN.

NOT OVER 6″ LONG.

IZE...........	¼	⅜	½	¾	1	1¼	1½	2	2½	3
EACH..	.18	.20	.22	.25	.30	.40	.50	.80	1.25	1.50

EXTRA HEAVY CLOSE OR SHORT NIPPLES.

LENGTHS SAME AS STANDARD.

SIZE	¼	⅜	½	¾	1	1¼	1½	2	2½	3	3½	4
EACH	.08	.08	.10	.12	.16	.22	.26	.36	.78	.96	1.50	1.70
SIZE	4½	5	6	7	8	....	....	....	....	....	....	....
EACH	2.50	3.10	3 70	6.20	9.10	....	....	....	....	....	....	....

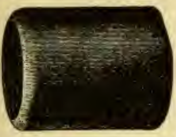
EXTRA HEAVY LONG NIPPLES.

LENGTHS SAME AS STANDARD.

SIZE	¼	⅜	½	¾	1	1¼	1½	2	2½	3	3½	4
EACH	.12	.12	.14	.18	.26	.34	.40	.54	1.18	1.44	2.10	2.40
SIZE	4½	5	6	....	....	....	....	....	....	....	....	....
EACH	3.40	4.90	5.80	....	....	....	....	....	....	....	....	....

EXTRA HEAVY EXTRA LONG NIPPLES.

LENGTH	4	5	6	7	8	9	10	11	12
Size. ¼	.14	.16	.20	.24	.28	.30	.34	.36	.38
⅜	.14	.16	.20	.24	.28	.30	.34	.36	.38
½	.16	.20	.24	.28	.32	.36	.40	.44	.46
¾	....	.22	.26	.34	.36	.40	.44	.48	.52
1	....	.30	.36	.46	.50	.56	.62	.68	.72
1¼	....	.40	.48	.58	.66	.72	.80	.88	.94
1½	....	.50	.58	.72	.80	.90	1.00	1.08	1.18
2	....	.64	.76	1.00	1.08	1.18	1.30	1.44	1.54
2½	....	....	1.36	1.80	1.94	2.12	2.34	2.52	2.70
3	....	....	1.70	2.16	2.40	2.66	2.90	3.16	3.40
3½	....	....	....	2.60	2.90	3.20	3.50	3.80	4.10
4	....	....	....	3.04	3.38	3.74	4.10	4.44	4.80
4½	....	....	....	4.50	5.00	5.50	5.90	6.34	6.80
5	....	....	....	5.16	5.66	6.20	6.70	7.20	7.70
6	....	....	....	6.10	6.70	7.40	8.00		9.30
7	....	....	....	8.10	8.90	9.80	10.60	11.50	12.30
8	....	....	....	9.10	10.10	11.00	12.00	13.00	14.00



IG. 113. WROUGHT-IRON COUPLING.

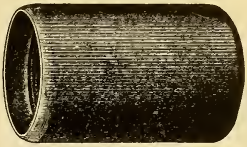


FIG. 113 A. DRIVE PIPE COUPLING.

WROUGHT-IRON COUPLINGS. — FIG. 113.

SIZE	1/8	1/4	3/8	1/2	3/4	1	1¼	1½	2	2½	3
PLAIN, EACH	.05	.05	.06	.07	.10	.13	.17	.21	.28	.40	.60
GALVANIZED, EACH	....	.06	.08	.10	.13	.18	.25	.32	.40	.55	.80
SIZE	3½	4	4½	5	6	7	8	9	10	12	....
PLAIN, EACH	.80	1.00	1.50	1.65	2.40	3.25	4.25	5.50	7.50	10.00	....
GALVANIZED, EACH	1.05	1.40	2.00	2.25	3.25	....	....	....	....	....	....

DRIVE PIPE COUPLINGS. — FIG. 113 A.

SIZE	3/4	1	1¼	1½	2	2½	3	3½	4	4½	5	6
R. H. EACH	.12	.15	.25	.30	.40	.60	.80	1.30	1.50	2.00	2.40	2.80
R. & L. EACH	.18	.23	.38	.45	.70	1.20	1.60	2.60	3.00	....	....	....

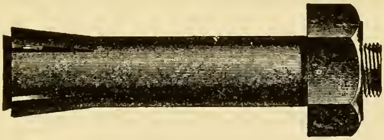


FIG. 114. EXPANSION BOLT.

EXPANSION BOLTS. — FIG. 114.

PRICE PER 100.

LENGTH,	3	3½	4	4½	5	6	7	8	9	10	11	12
Size.												
3/8	12.50	12.75	13.00	13.25	13.50	14.00	14.50	15.00	...	....	...	...
1/2	....	....	19.00	19.25	19.50	20.00	20.50	21.00	21.50	22.00	22.75	23.50
5/8	....	....	26.00	26.50	27.00	28.00	28.75	29.25	30.00	30.75	31.50	32.00
3/4	....	....	34.50	34.75	35.00	35.50	36.00	37.00	38.00	39.00	40.00	41.00
1	....	....	....	....	55.00	56.00	57.00	58.00	59.00	60.00	61.00	62.00

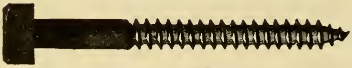


FIG. 115. LAG SCREW.

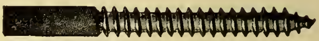


FIG. 117 LAG SCREW END.

LAG SCREWS.—WITH SQUARE HEADS.—FIG. 115.

PRICES PER HUNDRED.

LENGTH	1½	2	2½	3	3½	4	4½	5	5½	6	6½	7	7½	8	9	10	11	12
Diameter. 5/16	2.25	2.45	2.65	2.85	3.05	3.25	3.45	3.65	3.85	4.05	.	..	..	..		..	.	
⅜	2.70	2.96	3.22	3.48	3.74	4.00	4.26	4.52	4.78	5.04	..	..	..	..	.	..	.	..
7/16	3.15	3.47	3.79	4.11	4.43	4.75	5.07	5.39	5.71	6.03	6.35	6.67	6.99	7.31	7.95	..	..	..
½	3.75	4.11	4.47	4.83	5.19	5.55	5.91	6.27	6.63	6.99	7.35	7.71	8.07	8.43	9.15	9.87	10.59	11.31
9/16 and ⅝	..	5.00	5.50	6.00	6.50	7.00	7.50	8.00	8.50	9.00	9.50	10.00	10.50	11.00	12.00	13.00	14.00	15.0
¾	..	..	7.90	8.60	9.30	10.00	10.70	11.40	12.10	12.80	13.50	14.20	14.90	15.60	17.00	18.40	19.80	21.2
⅞	..	..	..	12.50	13.50	14.50	15.50	16.50	17.50	18.50	19.50	20.50	21,50	22.50	24.50	26.50	28.50	30.5
1	..	..	..	..	18.20	19.50	20.80	22.10	23.40	24 70	26.00	27.30	28.60	29.90	32.50	35.10	37.70	40.3

LAG SCREW ENDS, FIG. 117, SAME LIST PRICE.

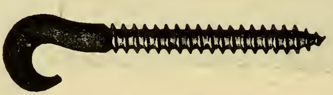


FIG. 116. LAG SCREW HOOK

LAG SCREW HOOKS.—FIG. 116.

PRICES PER HUNDRED.

LENGTH....	4	5	5½	6	6½	7	7½	8	9	10	11	12	13	14	15	16	17	18
Diameter. ⅜	11.25	12.10	..	12.80	..	13.40	..	13 80	14.20	15.30	15 70	16.10	16.50	17.30	.		.	
½	..	15.60	15.90	16.20	16.50	17 10	17 70	17.80	18.30	18.90	19.50	20.10	20.70	21.30	21·90	22.50	23 35	24.35
⅝	..	19.75	20.20	20.65	21.55	22.00	23.35	23.35	23.60	24.25	25.15	26.00	27.00	28.00	28.75	29.70	30.30	31.60
¾	.	30.70	..	32.00	..	33.30	..	34.70	36.00	36.75	37.35	39.50		..	.	..	.	.

MACHINE BOLTS.—WITH SQUARE HEADS AND NUTS.—FIG. 118.

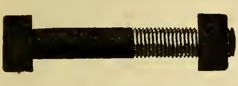


FIG. 118. SQUARE HEAD BOLT.

FIG. 119. HEXAGON HEAD BOLT.

PRICES PER HUNDRED.

MANUFACTURERS' STANDARD LIST, OCTOBER 1, 1899.

DIAMETER	1/4	5/16	3/8	7/16	1/2	9/16 and 5/8	3/4	7/8	1	1 1/8	1 1/4
Length. 1 1/2	1 70	2.00	2 40	2.80	3.60	5 20	7.20	10 50	15.10	22.50	30.00
2	1.78	2 12	2.56	3 00	3.86	5.58	7 70	11.20	16.00	23 70	31.50
2 1/2	1.86	2 24	2.72	3.20	4.12	5.96	8.20	11.90	16.90	24.90	33.00
3	1 94	2.36	2.88	3.40	4.38	6.34	8.70	12.60	17.80	26 10	34.50
3 1/2	2.02	2.48	3.04	3.60	4 64	6.72	9.20	13.30	18.70	27.30	36.00
4	2.10	2.60	3.20	3 80	4.90	7 10	9.70	14.00	19.60	28.50	37.50
4 1/2	2.18	2.72	3.36	4.00	5 16	7.48	10.20	14.70	20.50	29.70	39.00
5	2.26	2.84	3 52	4.20	5.42	7.86	10.70	15.40	21.40	30.90	40.50
5 1/2	2.34	2.96	3.68	4.40	5.68	8.24	11.20	16.10	22.30	32.10	42.00
6	2.42	3.08	3.84	4.60	5.94	8.62	11.70	16.80	23.20	33.30	43.50
6 1/2	2.50	3.20	4.00	4.80	6.20	9.00	12.20	17.50	24.10	34.50	45.00
7	2.58	3.32	4.16	5.00	6.46	9.38	12.70	18.20	25.00	35.70	46.50
7 1/2	2.66	3.44	4.32	5.20	6.72	9.76	13.20	18.90	25.90	36.90	48.00
8	2.74	3.56	4.48	5.40	6.98	10.14	13.70	19.60	26.80	38.10	49.50
9	2.90	3.80	4.80	5.80	7.50	10.90	14.70	21.00	28.60	40.50	52.50
10	3.06	4.04	5.12	6.20	8.02	11.66	15.70	22.40	30.40	42.90	55.50
11	3.22	4.28	5.44	6.60	8.54	12.42	16.70	23.80	32.20	45.30	58.50
12	3 38	4.52	5.76	7.00	9.06	13.18	17.70	25.20	34.00	47.70	61.50
13	..	....	6.08	7.40	9.58	13.94	18.70	26.60	35.80	50.10	64.50
14	..	....	6.40	7.80	10.10	14.70	19.70	28.00	37.60	52.50	67.50
15	.	....	6.72	8.20	10.62	15.46	20.70	29.40	39.40	54.90	70.50
16	...	....	7.04	8.60	11.14	16.62	21.70	30.80	41.20	57.30	73.50

Bolts with Hexagon Heads or Hexagon Nuts, Fig. 119, 10 per cent. extra. If both Hexagon Heads Hexagon Nuts, 20 per cent. extra.

WEIGHT OF MACHINE BOLTS.

SQUARE HEAD AND NUT.

POUNDS PER 100.

SIZE	1/4	5/16	3/8	7/16	1/2	5/8	3/4	7/8	1	1 1/8	1 1/4	1 3/8
Length 1 1/2	3.9	6.2	9.7	14.7	20	37	58	....	....	...	....	...
2	4.6	7.2	11.3	16.5	22	39	63	97	145	....	....	..
2 1/2	5.4	8.2	13	18.5	25	44	69	105	153	....	....	....
3	6.2	9.3	15	20.5	27	48	75	113	163	240	309	350
3 1/2	6.9	10.4	16	22.6	30	52	81	122	174	253	325	370
4	7.6	11.5	18	24.7	33	56	87	130	185	267	342	390
4 1/2	8.3	12.6	19	26.8	36	60	93	138	196	281	359	410
5	9.0	13.7	21	28.9	39	65	100	146	207	295	376	430
5 1/2	9.7	14.8	22	31.0	41	69	106	154	218	309	394	450
6	10.4	16	24	33	44	73	112	163	229	323	412	470
6 1/2	11.1	17	25	35	47	77	118	171	240	337	430	490
7	11.8	18	27	37	50	81	124	179	251	351	448	510
7 1/2	12.5	19.2	28.2	39	53	86	130	187	262	365	466	530
8	13.2	20.3	29.7	42	56	90	136	195	273	379	484	550
9	....	...	33	46	61	98	148	212	295	407	518	590
10	....	....	37	50	67	106	161	229	317	435	552	630
11	....	....	40	54	72	114	173	246	339	463	586	670
12	....	...	44	58	78	122	184	263	361	491	620	710
13	....	...	....	...	83	131	196	280	383	519	655	751
14	....	....	....	...	89	139	208	297	405	547	690	793
15	....	...	....	....	94	148	221	314	427	575	725	835
16	....	....	....	....	100	156	233	331	449	603	760	877

BREAKING STRAIN OF BOLTS.

DIAMETER	3/8	7/16	1/2	5/8	3/4	7/8	1	1 1/8	1 1/4	1 1/2
BREAKS AT LBS.	4,575	4,950	7,700	11,225	18,200	23,500	30,000	35,500	41,000	63,000

FLANGED FITTINGS
BRACKETS
AND FLOOR STANDS

Table 104. Table 104.

Walworth Standard Weight Flanged Fittings.

Working Steam Pressure, 100 lbs.

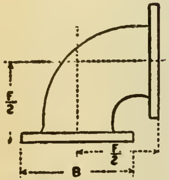


Table 104, No. A.

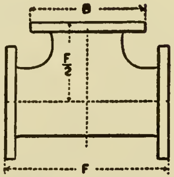


Table 104, No. C.

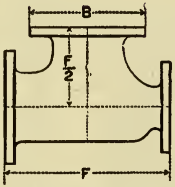


Table 104, No. D.

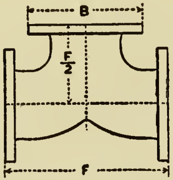


Table 104, No. E.

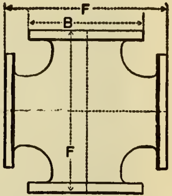


Table 104, No. F.

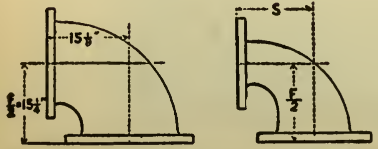
DIMENSIONS.

Size of Port inches	O	2½	3	3½	4	4½	5	6	7	8	9	10	12	13	14	15	16	18	20	22	24
Size Wrought Pipe "		2½	3	3½	4	4½	5	6	7	8	9	10	12	14 O.D.	15 O.D.	16 O.D.	17 O.D.	18 O.D.	20 O. D. 21 O. D.	22 O.D.	24 O.D.
Size Cast Iron Pipe "		2½	3	3½	4	4½	5	6	7	8	9	10	12	13	14	15	16	18	20	22	24
Face to Face . . "	F	9½	11	11½	12	12½	14	15	17¾	19	21½	23	25½	28	28	29¼	30½	33	36	40	44
Center to Face . . "	F/2	4¾	5½	5¾	6	6¼	7	7½	8⅞	9½	10¾	11½	12¾	14	14	14⅝	15¼	16½	18	20	22
Thickness of Shell "		9/32	5/16	5/16	5/16	11/32	7/16	15/32	17/32	9/16	⅝	11/16	¾	13/16	13/16	⅞	15/16	1	1	1 1/16	1⅛
Diameter of Flanges "	B	7	7½	8½	9	9¼	10	11	12½	13½	15	16	19	20	21	22¼	23½	25	27½	29½	31½
Thickness of Flanges "		11/16	¾	13/16	15/16	15/16	15/16	1	1 1/16	1⅛	1⅛	1 3/16	1¼	1⅜	1⅜	1⅜	1 7/16	1 9/16	1 11/16	1 13/16	1⅞
Diameter of Bolt Circle "		5½	6	7	7½	7¾	8½	9½	10¾	11¾	13¼	14¼	17	18	18¾	20	21¼	22¾	25	27¼	29¼
Number of Bolts		4	4	4	8	8	8	8	8	8	12	12	12	12	12	16	16	16	20	20	20
Size of Bolts . . inches		½	½	½	½	⅝	⅝	⅝	⅝	⅝	⅝	¾	¾	⅞	⅞	⅞	⅞	1	1	1	1

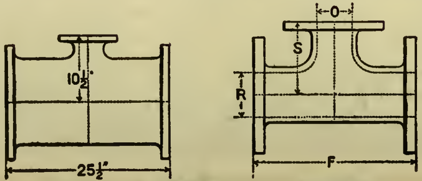
Examples from Table on next page.

ELBOWS, TEES, CROSSES—Reducing on Outlet.

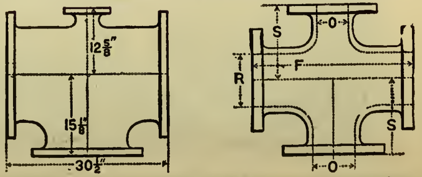
(See Table of Dimensions on next page.)



16" x 14" Ell, Table 104, No. A. Reducing.



12" x 4" Tee, Table 104, No. C, Reducing.



16" x 16" x 14" x 4" Cross, Table 104, No. F, Reducing.

Walworth Standard Weight Flanged Fittings.

Working Steam Pressure, 100 lbs.

(See Examples on opposite page.)

Dimensions of Elbows, Tees, and Crosses, Reducing on Outlet.

Diameter of Run. (R)	Face to Face. (F)	Center to Face. (S)																		
2½	9½	4¾																		
3	11	5	5½																	
3½	11½	5¼	5¾	5¾																
4	12	5½	6	6	6															
4½	12½	5¾	6¼	6¼	6¼	6¼														
5	14	6⅛	6⅝	6⅝	6⅝	6⅝	7													
6	15	6¼	6⅝	6⅝	6⅝	6⅝	7	7½												
7	17¾	7¼	7¾	7¾	7¾	7¾	8¼	8½	8⅞											
8	19	7¾	8¼	8¼	8¼	8¼	8⅝	9⅛	9⅝	9½										
9	21½	8⅜	8¾	8¾	8¾	8¾	9¼	9⅝	10	10⅛	10¾									
10	23	8⅞	9⅜	9⅜	9⅜	9⅜	9¾	10¼	10½	10⅝	11⅜	11½								
12	25½	10	10½	10½	10½	10½	10⅞	11¼	11⅝	11¾	12⅜	12½	12¾							
14*	28	11	11½	11½	11½	11½	11⅞	12⅜	12⅝	12¾	13½	13⅝	13¾	14						
15	29½	11⅝	12	12	12	12	12½	12⅞	13¼	13⅝	14	14¼	14⅝	14⅝	14⅝					
16	30½	12⅛	12⅝	12⅝	12⅝	12⅝	13	13½	13¾	13⅞	14½	14¾	14⅞	15⅛	15¼	15¼				
18	33	13¼	13¾	13¾	13¾	13¾	14	14½	14⅞	15	15⅝	15⅞	16	16¼	16¼	16⅝	16½			
20	36	14¾	14¾	14¾	14¾	14¾	15	15½	15⅞	16	16⅝	16⅞	17	17¼	17¼	17⅝	17½	18		
22	40	15⅝	15⅞	15⅞	15⅞	15⅞	16⅛	16⅝	16⅞	17	17¼	17⅞	18	18¼	18⅝	18½	18⅝	19	20	
24	44	16⅝	16¾	16¾	16¾	16⅞	17¼	17⅝	18	18⅛	18¾	19	19⅜	19¼	19⅝	19½	19⅝	20⅛	21	22
Diameter of Outlet . . . (O)		2½	3	3½	4	4½	5	6	7	8	9	10	12	14	15	16	18	20	22	24

NOTE. — 13″ Diameter of Run Fittings are same face to face and center to face as 14″.

13″ Fittings for 14″ O D. Wrought Pipe.
14″ „ „ 14″ C I. Pipe or 15″ O. D. Wrought Pipe.
15″ „ „ 15″ „ „ „ „ 16″ O. D. „ „
16″ „ „ 16″ „ „ „ „ 17″ O. D. „ „
18″ „ „ 18″ „ „ „ „ 18″ O. D. „ „
20″ „ „ 20″ „ „ „ „ 20″ or 21″ O. D Wrought Pipe.
22″ „ „ 22″ „ „ „ „ 22″ O. D Wrought Pipe.
24″ „ „ 24″ „ „ „ „ 24″ O. D. „ „

* NOTE. — 13″ Fittings face to face and center to face as 14″.

For Lists, see page 83.

Table 104.—Continued.

Table 104.—Continued.

Walworth Standard Weight Flanged Fittings.

Working Steam Pressure, 100 lbs.

(See Examples on opposite page.)

Dimensions of Tees, Increasing on Outlet. (Bull Head.)

Diameter of Outlet. (O)	Face to Face. (F)	Center to Face. (S)																		
2½	9½	4¾																		
3	11	5¼	5½																	
3½	11½	5¼	5½	5¾																
4	12	5¼	5½	5¾	6															
4½	12½	5¾	5½	5¾	6	6¼														
5	14		5⅞	6⅛	6⅜	6⅝	7													
6	15			6⅝	6⅞	7⅛	7½	7½												
7	17¾				7¼	7½	7⅞	7¾	8⅞											
8	19					7½	7⅞	8	9	9½										
9	21½						8½	8⅝	9⅝	10¼	10¾									
10	23							8⅞	9⅞	10⅝	11	11½								
12	25½								10	10½	11⅛	11¾	12¾							
14*	28									10¾	11¼	11⅞	13	14						
15	29¼										11⅝	12	13	14	14⅝					
16	30½											12	13⅜	14⅛	14¾	15¼				
18	33												13¼	14¼	14⅞	15⅝	16½			
20	36													14¾	15⅜	15⅞	17	18		
22	40														16⅜	16⅞	18	18	20	
24	44															17¾	19	19	21	22
Diameter of Run . . . . . (R)		2½	3	3½	4	4½	5	6	7	8	9	10	12	14	15	16	18	20	22	24

NOTE.—13″ Diameter of Outlet Fittings are same face to face and center to face as 14″.

13″ Fittings for 14″ O. D. Wrought Pipe.
14″ „ „ 14″ C. I. or 15″ O. D. Wrought Pipe.
15″ „ „ 15″ „ „ „ 16″ „ „ „ „
16″ „ „ 16″ „ „ Pipe 17″ O. D. Wrought Pipe.
18″ „ „ 18″ „ „ or 18″ O. D. Wrought Pipe.
20″ „ „ 20″ „ „ „ 20″ or 21″ O. D. Wrought Pipe.
22″ „ „ 22″ „ „ „ 22″ O. D. Wrought Pipe.
24″ „ „ 24″ „ „ „ 24″ „ „ „ „

* NOTE.—13″ Fittings same face to face and center to face as 14″.

For Lists, see page 83.

Walworth Standard Weight Flanged Fittings.

Working Steam Pressure, 100 lbs.

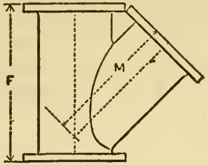


Table 105. No. A.

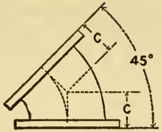


Table 105, No. B.

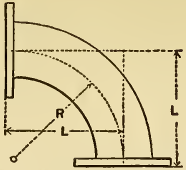


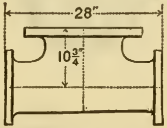
Table 105, No. C, Extra Long Turn.

DIMENSIONS.

Size of Port . . . . . inches	O	2½	3	3½	4	4½	5	6	7	8	9	10	12	13	14	15	16	18	20	22	24
Size Wrought Iron Pipe ,,		2½	3	3½	4	4½	5	6	7	8	9	10	12	14 O.D.	15 O.D.	16 O.D.	17 O.D.	18 O.D.	20 O.D. 21 O.D.	22 O.D.	24 O.D.
Size Cast Iron Pipe . . ,,		2½	3	3½	4	4½	5	6	7	8	9	10	12	13	14	15	16	18	20	22	24
Face to Face . . . . . ,,	F	10½	12	12¾	14	14¼	15¼	16¾	19	21⅜	22¾	24½	28¾	31½	31½	33⅝	35½	38	41¼	44⅜	47½
Center to Face . . . . ,,	M	9	10¼	10⅞	11¾	12	13	14¼	15⅝	17¼	19½	20½	24¼	26⅝	26⅝	28⅜	30¼	32	33	37½	40¼
Center to Face . . . . ,,	C	2¾	3¼	3⅜	3½	3⅝	3⅞	4⅜	5	5¼	5½	5⅝	6½	7	7	7½	7⅝	7¾	9	10	10¾
Center to Face . . . . ,,	L	6⅛	7½	8¼	10⅝	10⅞	11⅛	13	14½	18¼	21½	24¾	31	33	33	35	36	39	42	45	48
Radius of Center . . . ,,	R	5¼	5⅞	6¾	9⅛	9¼	9½	11⅜	12¾	16½	19¾	22⅞	28¾	30¾	30¾	32⅝	33½	36⅜	39¼	42	45

Tees, Increasing on Outlet (Bull Head).

See Table of Dimensions, preceding page.



8" x 14" Tee, Table 104, No C

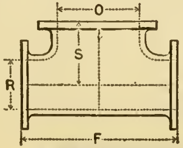
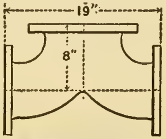
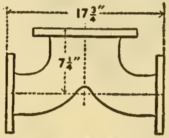


Table 104. No. C.



6" x 8" Tee, Table 104, No. E.



4" x 7" Tee, Table 104, No. E.

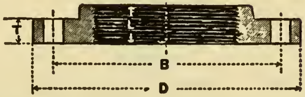
For Lists, see page 83.

Table 106.

Table 106.

Walworth Standard Weight Flanges.

Working Steam Pressure 100 lbs.



Standard Weight Flanges to Match Valves and Fittings, Bolt Circles, and Number of Bolts, etc.

Working Steam Pressure 100 lbs.

Pipe Size . . . inches		2 1/2	3	3 1/2	4	4 1/2	5	6	7	8	9	10	12	14 O. D.	15 O. D.	16 O. D.	17 O. D.	18 O. D.	20 O. D.	21 O. D.	22 O. D.	24 O. D.
Diameter of Flange ,,	D	7	7 1/2	8 1/2	9	9 1/4	10	11	12 1/2	13 1/2	15	16	19	20	21	22 1/4	23 1/2	25	27 1/2	27 1/2	29 1/2	31 1/2
Thickness . ,,	T	11/16	3/4	13/16	13/16	15/16	15/16	1	1 1/16	1 1/8	1 1/8	1 3/16	1 1/4	1 3/8	1 3/8	1 3/8	1 7/16	1 9/16	1 11/16	1 11/16	1 13/16	1 7/8
Length of Thread . ,,	L	1	1	1 1/16	1 1/8	1 1/4	1 1/4	1 3/8	1 1/2	1 5/8	1 3/4	1 3/4	1 7/8	2	2	2 1/4	2 1/4	2 1/2	2 1/2	2 3/4	2 3/4	3
Diameter Bolt Circle ,,	B	5 1/2	6	7	7 1/2	7 3/4	8 1/2	9 1/2	10 3/4	11 3/4	13 1/4	14 1/4	17	18	18 3/4	20	21 1/4	22 3/4	25	25	27 1/4	29 1/4
Number of Bolts		4	4	4	8	8	8	8	8	8	12	12	12	12	12	16	16	16	20	20	20	20
Size of Bolts . . . inches		1/2	1/2	1/2	1/2	5/8	5/8	5/8	5/8	5/8	5/8	3/4	3/4	7/8	7/8	7/8	7/8	1	1	1	1	1

For Price List, see page 83.

GALVANIZING.

We have recently installed at our factory a **COMPLETE GALVANIZING PLANT,** where we are prepared to galvanize castings of all descriptions; also pipe and tubes of all sizes and lengths.

PRICE LIST
OF
STANDARD WEIGHT FLANGED FITTINGS.
WORKING STEAM PRESSURE 100 LBS.

TABLE 104.

NOTE.—13″ Fittings same price as 14″.

SIZE	2½	3	3½	4	4½	5	6	7	8	9	10	12	14
A TABLE 104. ELBOWS. FACED ONLY	5.00	5.75	6.50	7.25	9.00	9.75	12.00	16.00	20.00	26.00	32.00	44.00	58.00
A TABLE 104. ELBOWS. FACED AND DRILLED	6.25	7.00	7.75	9.25	11.00	11.75	14.00	19.75	23.75	30.00	36.00	50.00	65.00
C TABLE 104. TEES. FACED ONLY	7.25	8.25	9.50	10.50	13.00	14.25	17.50	23.00	29.00	38.00	46.50	64.00	84.00
C TABLE 104. TEES. FACED AND DRILLED	9.00	10.00	11.25	13.50	16.00	17.25	20.50	28.75	34.75	44.00	52.50	73.00	95.00
C & D TABLE 104. TEES. REDUCING, FACED ONLY	8.25	9.50	11.00	12.00	15.00	16.25	20.00	26.50	33.50	43.50	53.50	74.00	96.00
C & D TABLE 104. TEES. REDUCING, FACED AND DRILLED	10.00	11.25	12.75	15.00	18.00	19.25	23.00	32.00	39.00	50.00	60.00	83.00	107.00
E TABLE 104. TEES. FACED ONLY	8.25	9.50	11.00	12.00	15.00	16.25	20.00	26.50	33.50	43.50	53.50	74.00	96.00
E TABLE 104. TEES. FACED AND DRILLED	10.00	11.25	12.75	15.00	18.00	19.25	23.00	32.00	39.00	50.00	60.00	83.00	107.00
E TABLE 104. TEES. REDUCING, FACED ONLY	9.50	11.00	12.50	13.75	17.25	18.75	23.00	30.00	38.50	50.00	61.50	85.00	110.00
E TABLE 104. TEES. REDUCING, FACED AND DRILLED	11.25	12.75	14.25	16.75	20.50	21.75	26.00	35.50	44.00	56.50	68.00	94.00	121.00
F TABLE 104. CROSSES. FACED ONLY	10.00	11.50	13.00	14.50	18.00	19.50	24.00	32.00	40.00	52.00	64.00	88.00	116.00
F TABLE 104. CROSSES. FACED AND DRILLED	12.50	14.00	15 50	18.50	22.00	23.50	28.00	39.50	47.50	60.00	72.00	100.00	130.00
F TABLE 104. CROSSES. REDUCING, FACED ONLY	11.50	13.25	15.00	16.75	20.75	22.50	27.50	37.00	46.00	60.00	74.00	100.00	132.00
F TABLE 104. CROSSES. FACED AND DRILLED	14.00	15.75	17.50	20.75	25.00	26.50	31.50	45.00	53.50	68.00	82.00	112.00	146.00

TABLE 105.

A TABLE 105. Y BRANCHES, FACED ONLY	10.00	11.50	13.00	14.50	18.00	19.50	24.00	32.00	40.00	52.00	64.00	88.00	116.00
A TABLE 105. Y BRANCHES, FACED AND DRILLED	12.50	14.00	15.50	18.50	22.00	23.50	28.00	39.50	47.50	60.00	72.00	100.00	130.00
A TABLE 105. Y BRANCHES, REDUCING, FACED ONLY	11.50	13.25	15.00	16.75	20.75	22.50	27.50	37.00	46.00	60.00	74.00	100.00	132.00
A TABLE 105. Y BRANCHES, REDUCING F. AND D.	14.00	15.75	17.50	20.75	25.00	26.50	31.50	45.00	53.50	68.00	82.00	112.00	146.00
B TABLE 105. 45° ELBOWS. FACED ONLY	5.50	6.25	7.25	8.00	10.00	10.75	13.00	16.00	20.00	26.00	32.00	44.00	58.00
B TABLE 105. 45° ELBOWS. FACED AND DRILLED	6.75	7.50	8.50	10.00	12.00	12.75	15.00	19.75	23.75	30.00	36.00	50.00	65.00
C TABLE 105. EXTRA LONG TURN ELBOWS, FACED ONLY	6.10	7.25	9.25	11.50	14.50	15.75	20.00	27.25	33.50	56.00	64.75	97.50	130.00
C TABLE 105. EXTRA LONG TURN ELBOWS, FACED AND DRILLED	7.35	8.50	10.50	13.50	16.50	17.75	22.00	31.00	37.25	60.00	68.75	103.50	137.00

FLANGES.

TABLE 106.

TO MATCH TABLE 104 AND 105 FITTINGS.

FLANGES, FACED ONLY	1.40	1.60	1.80	2.15	2.50	2.80	3.20	4.35	5.00	6.75	7.75	10.50	13.75
FLANGES, FACED AND DRILLED	2.00	2.25	2.50	3.00	3.35	3.65	4.00	5.75	6.50	8.25	9.25	12.50	16.00
BLANK FLANGES, FACED ONLY	1.60	1.85	2.10	2.50	2.90	3.25	3.70	5.00	5.75	7.75	9.00	14.00	17.50
BLANK FLANGES, FACED AND DRILLED	2.20	2.50	2.80	3.35	3.75	4.10	4.50	6.40	7.25	9.25	10.60	16.00	19.75

Table 107.

Walworth Extra Heavy Flanged Fittings.

Table 107.

Working Steam Pressure, 250 lbs.

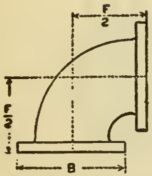


Table 107, No. A.

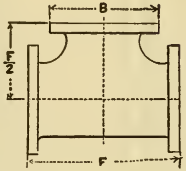


Table 107, No. C.

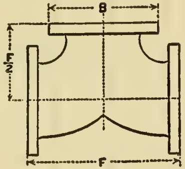


Table 107, No. D.

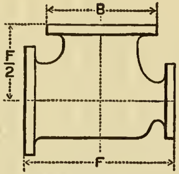


Table 107, No. E.

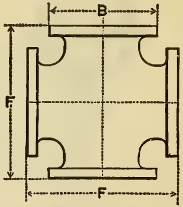


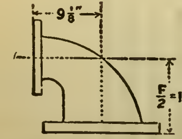
Table 107, No. F.

DIMENSIONS.

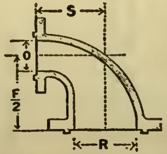
Size of Port . . . . . inches	O	2½	3	3½	4	4½	5	6	7	8	9	10	12	13	14	15	16	18	20	22	24
For Wrought Iron Pipe . ,,		2½	3	3½	4	4½	5	6	7	8	9	10	12	14 O. D.	15 O. D.	16 O. D.	17 O. D.	18 O. D.	20 O. D. 21 O. D.	22 O. D.	24 O. D.
For Cast Iron Pipe . ,,	F	2½	3	3½	4	4½	5	6	7	8	9	10	12	13	14	15	16	18	20	22	24
Face to Face . . . ,,	F	11	12	13	14	15	16	17½	18½	20	21½	23	25½	28	28	29¼	30½	33	36	40	44
Center to Face . . . . ,,	F/2	5½	6	6½	7	7½	8	8¾	9¼	10	10¾	11½	12¾	14	14	14⅝	15¼	16½	18	20	22
Thickness of Shell . . ,,		9/16	⅝	21/32	23/32	¾	¾	13/16	13/16	27/32	⅞	15/16	1⅛	1 7/32	1 7/32	1 5/16	1⅜	1 7/16	1½	1 15/32	1 11/16
Diameter of Flanges ,,	B	7½	8¼	9	10	10½	11	12½	14	15	16	17½	20	21½	22½	23½	25	27	29½	31½	34
Thickness of Flanges . ,,		1	1⅛	1 3/16	1¼	1 5/16	1⅜	1 7/16	1½	1⅝	1¾	1⅞	2	2⅛	2⅛	2 3/16	2¼	2⅜	2½	2⅝	2¾
Diameter of Bolt Circle . ,,		5⅞	6⅝	7¼	7⅞	8½	9¼	10⅝	11⅞	13	14	15¼	17¾	19	20	21	22½	24½	26¾	28¾	31¼
Number of Bolts . . .		4	8	8	8	8	8	12	12	12	12	16	16	20	20	20	20	24	24	28	28
Size of Bolts . . . . inches		¾	⅝	⅝	¾	¾	¾	¾	⅞	⅞	⅞	⅞	⅞	⅞	⅞	1	1	1	1⅛	1⅛	1⅛

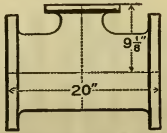
(See Table of Dimensions on next page.)

ELBOWS, TEES, CROSSES—Reducing on Outlet.

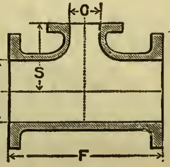


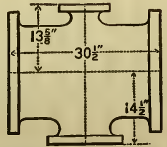
8" x 4" Elbow.

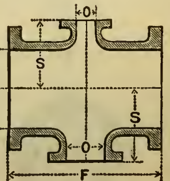




8" x 4" Tee, Table 107, No. C, Reducing.







16" x 16" x 8" x 4" Cross, Table 107, No. F, Reducing.

For Lists, see page 89.

Examples from Table on next page.

Walworth Extra Heavy Flanged Fittings.

Working Steam Pressure, 250 lbs.

(See Examples on opposite page.)

Dimensions.—Elbows, Tees, and Crosses, Reducing on Outlet.

Diameter of Run. (R)	Face to Face. (F)	Center to Face. (S)																		
2½	11	5½																		
3	12	6	6																	
3½	13	6⅛	6¼	6½																
4	14	6⅜	6⅝	6⅞	7															
4½	15	6¾	6⅞	7⅛	7¼	7½														
5	16	7	7⅛	7⅜	7½	7¾	8													
6	17½	7½	7⅝	7⅞	8⅛	8¼	8½	8¾												
7	18½	8	8¼	8⅜	8⅝	8¾	9	9¼	9½											
8	20	8½	8¾	8⅞	9⅛	9⅜	9⅝	9¾	9¾	10										
9	21½	9	9¼	9½	9⅝	9⅞	10⅛	10¼	10¼	10½	10¾									
10	23	9⅝	9⅞	10	10¼	10½	10¾	10⅞	10⅞	11⅛	11¼	11½								
12	25½	10⅝	11	11¼	11⅜	11⅝	11⅞	12⅛	12⅛	12¼	12½	12⅝	12¾							
14*	28	12	12⅛	12¼	12½	12¾	13	13⅛	13⅛	13⅜	13⅝	13¾	13⅞	14						
15	29½	12½	12¾	12⅞	13⅛	13⅜	13⅝	13¾	13¾	14	14¼	14⅜	14⅝	14⅝	14⅝					
16	30½	13	13¼	13½	13⅝	13⅞	14⅛	14¼	14¼	14½	14¾	14⅞	15	15⅛	15¼	15¼				
18	33	14⅛	14¼	14½	14¾	15	15¼	15⅜	15⅜	15⅝	15⅞	16	16⅛	16¼	16¼	16¼	16½			
20	36	15¼	15⅜	15⅝	15¾	16	16¼	16½	16½	16⅝	16⅞	17	17⅛	17¼	17¼	17⅜	17⅝	18		
22	40	15¾	16	16¼	16⅜	16⅝	16⅞	17	17	17¼	17½	17⅝	17¾	17⅞	17⅞	18	18¼	18⅝	20	
24	44	17⅜	17½	17¾	18	18¼	18½	18⅝	18⅝	19	19⅛	19¼	19⅜	19½	19½	19½	19¾	20¼	21¼	22
Diameter of Outlet		(O)	2½	3	3½	4	4½	5	6	7	8	9	10	12	14	15	16	18	20	22	24

Note.—13″ Fittings same face to face and center to face as 14″.
12″ Fittings for 13″ C. I. Pipe or 14″ O. D. Wrought Pipe.
14″ „ „ 14″ „ „ „ „ 15″ „ „ „ „
15″ „ „ 15″ „ „ „ „ 16″ „ „ „ „
16″ „ „ 16″ „ „ „ „ 17″ „ „ „ „
18″ „ „ 18″ „ „ „ „ 18″ „ „ „ „
20″ „ „ 20″ „ „ „ „ 20″ or 21″ O. D. Wrought Pipe.
22″ „ „ 22″ „ „ „ „ 22″ O. D. Wrought Pipe
24″ „ „ 24″ „ „ „ „ 24″ „ „ „ „

* Note.—13″ Fittings same face to face and center to face as 14″.

For Lists, see page 89.

Table 107.—Continued. Table 107.—Continued.

Walworth Extra Heavy Flanged Fittings.

Working Steam Pressure, 250 lbs.

(See Examples on following page.)

Dimensions of Tees, Increasing on Outlet. (Bull Head Tees.)

Diameter of Outlet. (O)	Face to Face. (F)	Center to Face. (S)																		
2½	11	5½																		
3	12	5¾	6																	
3½	13	5⅞	6¼	6½																
4	14	6⅛	6⅜	6¾	7															
4½	15	6¼	6⅝	7	7¼	7½														
5	16		6⅞	7¼	7½	7¾	8													
6	17½			7⅝	7¾	8	8¼	8¾												
7	18½				7¾	8	8¼	8¾	9¼											
8	20					8½	8⅝	9	9½	10										
9	21½						8⅝	9¼	9¾	10¼	10¾									
10	23							9⅝	9⅞	10⅝	11	11½								
12	25½								10	10½	11	11⅝	12¾							
14*	28									10⅝	11⅛	11¾	12⅞	14						
15	29½										11¼	11¾	13	14	14⅝					
16	30½											11⅞	13	14⅛	14¾	15¼				
18	33												13¼	14¼	14⅞	15½	16½			
20	36													14¾	15¼	15⅞	17	18		
22	40														16⅜	17	18	19	20	
24	44															17⅝	18⅝	19¾	20¼	22
Diameter of Run . . . . . (R)		2½	3	3½	4	4½	5	6	7	8	9	10	12	14	15	16	18	20	22	24

NOTE.—13″ Fittings same face to face and center to face dimensions as 14″.

13″ Fittings for 14″ O. D. Wrought Pipe.
14″ „ „ 14″ C. I. Pipe or 15″ O. D. Wrought Pipe.
15″ „ „ 15″ „ „ „ „ 16″ „ „ „ „
16″ „ „ 16″ „ „ „ „ 17″ „ „ „ „
18″ „ „ 18″ „ „ „ „ 18″ „ „ „ „
20″ „ „ 20″ „ „ „ „ 20″ or 21″ O. D. Wrought Pipe.
22″ „ „ 22″ „ „ „ „ 22″ O. D. Wrought Pipe.
24″ „ „ 24″ „ „ „ „ 24″ „ „ „ „

* NOTE.—13″ Fittings same face to face and center to face dimensions as 14″.

For Lists, see page 89.

Walworth Extra Heavy Flanged Fittings.

Table 108.

Working Steam Pressure, 250 lbs.

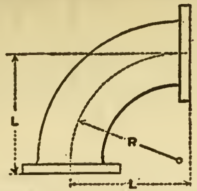


Table 108, No. A. Extra Long Turn.

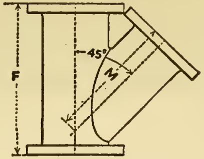


Table 108, No. B.

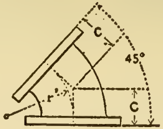


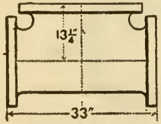
Table 108, No. C.

DIMENSIONS.

Size of Port . . . . . inches	O	2½	3	3½	4	4½	5	6	7	8	9	10	12	13	14	15	16	18	20	22	24
For Wrought Iron Pipe ,,		2½	3	3½	4	4½	5	6	7	8	9	10	12	14 O. D.	15 O. D.	16 O. D.	17 O. D.	18 O. D.	20 O.D. 21 O.D.	22 O. D.	24 O. D.
For Cast Iron Pipe . . ,,		2½	3	3½	4	4½	5	6	7	8	9	10	12	13	14	15	16	18	20	22	24
Face to Face . . . ,,	F	12	14½	15	16	17	18	20¾	22	23½	25	27½	32	36	36	36½	39½	43	45½	49	52¾
Center to Face . . . ,,	M	10	11¾	11¾	13¼	14	14¾	17	18½	19½	20¾	22¾	26	29½	29½	30	32¼	35¾	37¼	40¼	43½
Center to Face . . . ,,	C	3	3½	3½	4	4¼	5	5½	5¾	6	6½	6¾	7½	8¼	8¼	8½	9	9½	10½	11	11½
Radius of Center . . ,,	r'	5	5½	5½	6½	6½	8½	9	9½	10½	11½	12	12½	14½	14½	15	15	17	18½	19½	20½
Center to Face . . . ,,	L	6⅛	7¼	8¼	10⅝	10⅞	11⅛	13	14½	18¼	21½	24¾	31	33	33	35	36	39	42	45	48
Radius of Center . . . ,,	R	5¼	5⅞	6¾	9⅛	9¼	9½	11⅜	13¾	16½	19¾	22⅞	28¾	30¾	30¾	32⅝	33½	36⅜	39¼	42	45

Tees, Increasing on Outlet. (Bull Head.)

See Table of Dimensions on page 84.



12" x 18" Tee, Table 107, No. C.

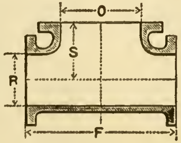
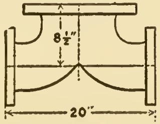
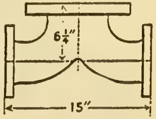


Table 107, No. C.
For Lists, see page 89.



4½" x 8" Tee, Table 107, No. D.



2½" x 4½" Tee, Table 107, No. D.

Examples from Table on preceding page.

Walworth Extra Heavy Flanges.

Working Steam Pressure, 250 lbs.

DIMENSIONS.

Pipe Size . . . . inches		2½	3	3½	4	4½	5	6	7	8	9	10	12	14 O.D.	15 O.D.	16 O.D.	17 O.D.	18 O.D.	20 O.D.	21 O.D. 22 O.D	24 O.D.
Diameter of Flange . . . "		7½	8¼	9	10	10½	11	12½	14	15	16	17½	20	21½	22½	23½	25	27	29½	31½	34
Thickness of Flange . . . "		1	1⅛	1 3/16	1¼	1 5/16	1⅜	1 7/16	1½	1⅝	1¾	1⅞	2	2	2⅛	2 9/16	2¼	2⅜	2½	2⅝	2¾
Diameter of Bolt Circle . . "		5⅞	6⅝	7¼	7⅞	8½	9¼	10⅝	11⅞	13	14	15¼	17¾	19	20	21	22½	24½	26¾	28¾	31¼
Number of Bolts		4	8	8	8	8	8	12	12	12	12	16	16	20	20	20	20	24	24	28	28
Size of Bolts . . . . . inches		¾	⅝	⅝	¾	¾	¾	¾	⅞	⅞	⅞	⅞	⅞	⅞	⅞	1	1	1	1⅛	1⅛	1⅛
Diameter of Bolt Holes . "		⅞	¾	¾	⅞	⅞	⅞	⅞	1	1	1	1	1	1	1	1⅛	1⅛	1⅛	1¼	1¼	1¼
Height of Flange . . . "		1 5/16	1⅝	1¾	1 13/16	1⅞	2	2	2 3/16	2¼	2⅜	2 7/16	2 13/16	3 1/16	3 3/16	3¼	3⅜	3½	3¾	3¾	4

Price List Extra Heavy Flanges.

Size	2½	3	3½	4	4½	5	6	7	8	9	10	12	14 O.D.	15 O.D.	16 O.D.
Faced	1.40	2.00	2.10	2.60	3.10	3.25	4.55	5.75	6.25	7.35	8.70	14.00	20.50	20.50	25.60
Faced and Drilled	2.00	2.60	2.85	3.85	4.35	4.75	6.25	7.60	8.10	9.40	11.00	17.50	25.50	25.50	31.00

PRICE LIST

EXTRA HEAVY FLANGED FITTINGS.

250 LBS. WORKING PRESSURE.

TABLE 107. STRAIGHT SIZES.

SIZE	2½	3	3½	4	4½	5	6	7	8	9	10	12	14
ELBOWS, A. FACED	6.00	7.00	8.00	10.25	11.50	12.50	18.75	21.75	26.50	33.50	42.00	62.25	82.50
DITTO. FACED AND DRILLED	7.90	8.90	9.90	13.25	14.50	15.50	21.75	27.40	32.15	39.50	48.00	71.25	93.00
TEES, C AND D. FACED	8.00	10.60	12.50	14.25	17.00	19.25	24.00	28.00	36.75	44.25	59.00	77.00	105.00
TEES, C AND D. FACED AND DRILLED	10.65	13.25	15.15	18.75	21.50	23.75	28.50	36.65	45.40	53.25	68.00	90.50	121.50
CROSSES F. FACED	11.00	13.50	17.50	22.50	24.50	25.75	34.75	41.00	53.00	74.00	82.00	105.00	142.00
DITTO. FACED AND DRILLED	14.75	17.25	21.25	28.50	30.50	31.75	40.75	50.75	64.25	86.00	94.00	123.00	163.00

NOTE. — 13″ Fittings same list as 14″.

TABLE 107. REDUCING SIZES.

SIZE	2½	3	3½	4	4½	5	6	7	8	9	10	12	14
ELBOWS, A. FACED	6.90	8.05	9.20	12.30	13.25	14.40	21.55	23.35	30.50	38.55	48.30	71.60	94.90
DITTO. FACED AND DRILLED	9.10	10.29	11.40	15.25	16.70	17.85	25.00	31.50	37.00	45.40	55.20	81.95	106.95
TEES, C, D, AND E. FACED	9.20	12.20	14.40	16.40	19.55	22.15	27.60	33.20	42.25	50.90	64.85	88.55	120.75
DITTO. FACED AND DRILLED	12.25	15.55	17.40	21.55	24.65	27.30	32.80	41.95	52.20	60.85	78.20	104.10	139.70
CROSSES, F. FACED	12.65	15.55	20.10	25.90	28.20	29.60	39.95	47.15	60.95	85.10	94.30	120.75	163.30
DITTO. FACED AND DRILLED	16.95	19.85	24.45	32.80	35.10	36.50	46.90	58.35	73.90	98.90	108.10	141.45	187.45

NOTE. — 13″ Fittings same list as 14″.

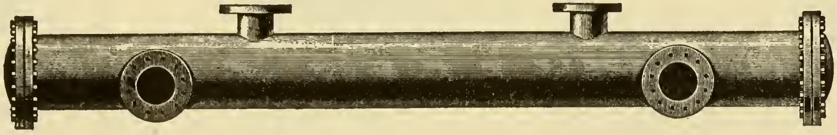
TABLE 108. EXTRA LONG TURN ELBOWS. 45° ELBOWS. Y BRANCHES.

SIZE	2½	3	3½	4	4½	5	6	7	8	9	10	12	14
EXTRA LONG TURN ELBOWS, A. FACED	6.50	8.75	10.00	13.00	15.50	18.50	24.00	30.00	37.75	55.00	68.00	109.00	155.00
DITTO. FACED AND DRILLED	8.40	10.65	11.90	16.00	18.50	21.50	27.00	35.60	43.35	61.00	74.00	118.00	165.50
Y BRANCHES, B. FACED	11.00	14.00	17.00	22.50	25.00	27.00	36.00	45.00	52.50	71.25	90.00	129.00	142.00
DITTO. FACED AND DRILLED	13.65	16.65	19.65	27.00	29.50	31.50	40.50	53.65	61.15	80.25	99.00	142.00	158.50
45° ELBOWS, C. FACED	6.00	7.00	8.00	8.75	11.00	12.00	15.00	19.00	23.00	30.00	37.00	54.00	74.00
DITTO. FACED AND DRILLED	7.90	8.90	9.90	11.75	14.00	15.00	18.00	24.65	28.65	36.00	43.00	63.00	84.50

NOTE. — 13″ Fittings same list as 14″.

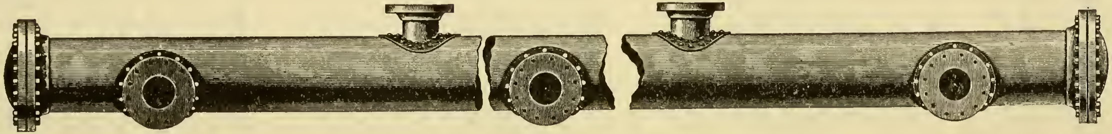
For Reducing Sizes, Table 108, add 15 per cent.

CAST IRON, GUN IRON, AND STEEL DRUMS.



CAST IRON OR GUN IRON DRUMS.

CAST IN SECTIONS 12 FEET LONG.



WELDED STEEL PIPE DRUM WITH WELDED STEEL PIPE NOZZLES RIVETED ON.

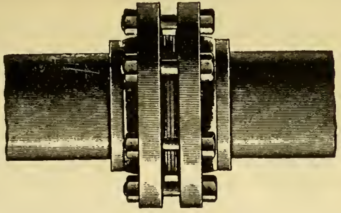
USING WALMANCO FLANGES.

The cuts above are intended to show our style of Drums or Headers for high pressure work.

PRICES WILL BE QUOTED UPON APPLICATION.

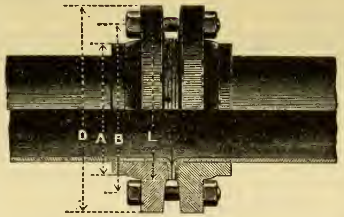
THE WALMANCO PIPE JOINT.

FLANGES SWIVEL.



THE WALMANCO PIPE JOINT.

WORKING STEAM PRESSURE 250 LBS.



SECTIONAL VIEW.

NO THREADS. NO RIVETS.

This flange or joint, as shown in the cut, is made by flanging over the pipe onto the face of the flange or collar. The pipe is first centered in a lathe and the ends squared off. The flange is then faced and bored and put ou the pipe, after which it goes into the furnace and the pipe is flanged over by hand. The work then goes back to the lathe, where the pipe is faced off. The result is perfect—as the many thousand of these joints now in use testify

DIMENSIONS AND PRICE LIST WALMANCO FLANGES. STANDARD WEIGHT, ON STRAIGHT PIPE.

Size of Pipe . inches	5	6	7	8	9	10	12	14 O.D.	15 O.D.	16 O.D.	17 O.D.	18 O.D.	20 O.D.	21 O.D.	22 O.D.	24 O.D.
Diameter of Flange . . . . ,,	10	11	12½	13½	15	16	19	20	21	22½	23½	25	27½	27½	29½	31½
Bolt Circle . . . . . . ,,	8½	9½	10¾	11¾	13¼	14¼	17	18	18¾	20	21¼	22¾	25	25	27¼	29½
No. of Bolts . . .	8	8	8	8	12	12	12	12	12	16	16	16	20	20	20	20
Size of Bolts . . . inches	⅝	⅝	⅝	⅝	⅝	¾	¾	⅞	⅞	⅞	⅞	1	1	1	1	1
C. I. Standard Weight Flanges, per end, ,,	12.80	12.80	14.70	16.00	18.35	20.55	24.00	28.00	28.00	33.60	42.70	42.70	48.00	51.35	53.35	58.70

DIMENSIONS AND PRICE LIST WALMANCO FLANGES. EXTRA HEAVY, ON STRAIGHT PIPE.

Size of Pipe . . . . inches	5	6	7	8	9	10	12	14 O.D.	15 O.D.	16 O.D.	17 O.D	18 O.D.	20 O.D.	21 O.D.	22 O.D.	24 O.D.
Diameter of Flange . . . . . . ,,	11	12½	14	15	16	17½	20	21½	22½	23½	25	27	29½	31½	31½	34
Bolt Circle . . . . ,,	9¼	10⅝	11⅞	13	14	15¼	17¾	19	20	21	22½	24¼	26¾	28¾	28¾	31½
No. of Bolts	8	12	12	12	12	10	16	20	20	20	20	24	24	24	28	28
Size of Bolts . . . . inches	¾	¾	⅞	⅞	⅞	⅞	⅞	⅞	⅞	1	1	1	1⅛	1⅛	1⅛	1⅛
C. I. Flanges, extra heavy, per end	13.35	13.35	15.35	16.70	20.00	22.00	26.70	30.70	30.70	38.00	46.70	46.70	52.70	55.75	58.70	64.00
Gun Iron Flanges, extra heavy, per end	14.05	14.25	16.50	17.90	21.60	23.70	29.10	34.00	34.05	41.40	52.15	52.15	58.78	61.85	64.57	70.40
Rolled Steel Flanges, per end . .	.	.	.	32.60	38.60	46.45	56.15	67.90	68.80	80.15	96.10	104.30	123.00	140.70	147.10	166.25

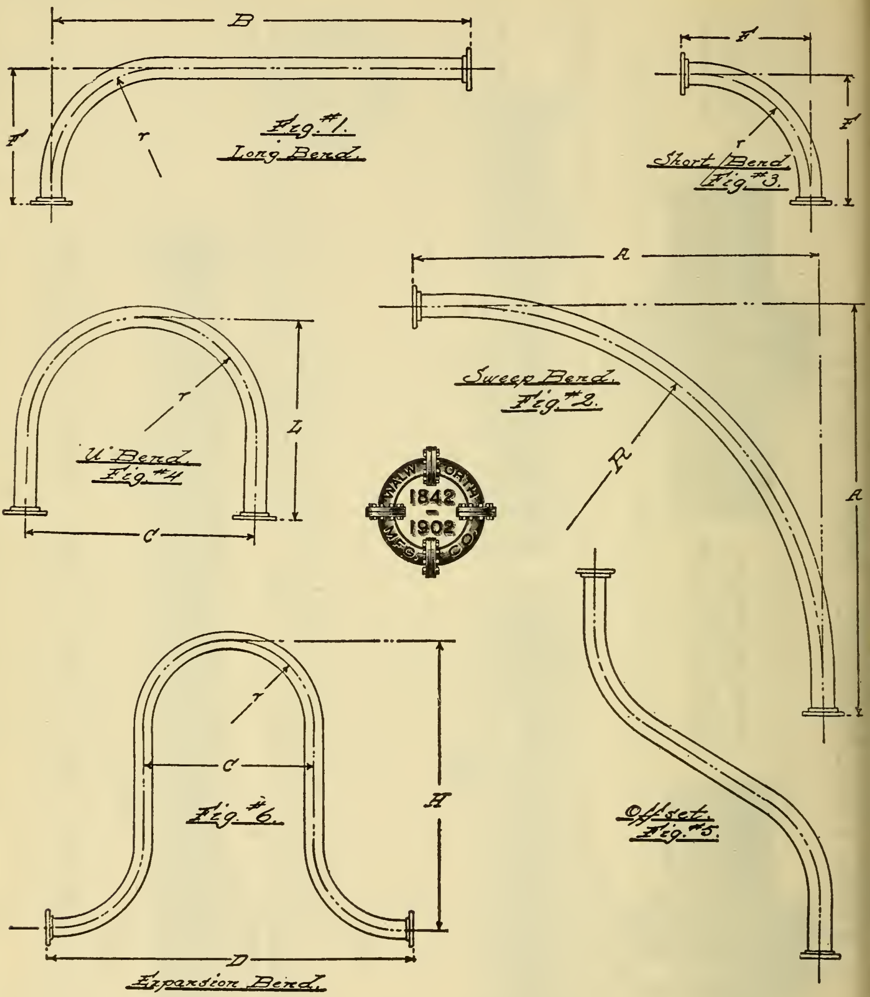


Fig. #1. Long Bend.

Short Bend Fig. #3.

Sweep Bend. Fig. #2.

"U" Bend. Fig. #4

Fig. #6.

Expansion Bend.

Offset. Fig. #5.

PIPE BENDS.

STANDARD WEIGHT OR EXTRA HEAVY.

Made to a minimum radius equal to 5 diameters, providing the center to face measures allow not less than 4″ to 6″ of straight pipe on each end. Amount of pipe in bends is figured on the basis of center to face measures added together; *i. e.*, a bend 6 ft. x 7 ft. = 13 ft. pipe.

Bends all sizes from ⅛″ to 24″ diameter.

Flanges standard or extra heavy in cast-iron, gun iron, cast-steel, rolled steel, and either screwed or with the Walmanco flanges.

For Lists, see next page.

PRICE LIST

FOR 90° OR SQUARE PIPE BENDS, NOT INCLUDING PIPE, WITH THREADED FLANGES.

Size . . . . inches	2½	3	3½	4	4½	5	6	7	8	9	10	12	14 O.D.	15 O.D.	16 O.D.	17 O.D.	18 O.D.	20 O.D.	21 O.D.	22 O.D.	24 O.D.
Price, bending only		6.00	7.35	8.00	10.70	11.75	14.70	17.25	23.35	26.00	32.00	51.35	58.65	64.55	70.40	76.25	88.00	96.80	99.75	102.70	111.50
Price, with extra heavy Flanges, C. I.		16.45	19.10	23.35	25.85	28.40	35.05	42.25	54.00	65.60	76.15	112.40	SEE PRICE FOR WALMANCO FLANGES.								
Price, with extra heavy Flanges, G. I.		17.20	19.90	24.40	27.00	29.55	36.75	44.25	56.25	68.00	79.20	117.00									

For U Bends, *add one extra bend.* For Offset Bends, *add one extra bend.* Expansion Bends, *special prices on application.*

PRICE LIST

FOR 90° OR SQUARE PIPE BENDS, NOT INCLUDING PIPE, WITH WALMANCO FLANGES.

Size. . . . . inches	5	6	7	8	9	10	12	14 O.D.	15 O.D.	16 O.D.	17 O.D.	18 O.D.	20 O.D.	21 O.D.	22 O.D.	24 O.D.
Bending only	11.75	14.70	17.25	23.35	26.00	32.00	51.35	58.65	64.55	70.40	76.25	88.00	96.80	99.75	102.70	111.50
Standard Weight C. I. Flanges	46.15	49.10	57.00	67.35	75.90	88.00	117.25	134.65	140.55	166.40	196.25	208.00	228.80	237.10	244.95	264.00
Extra Heavy C. I. Flanges . . .	46.95	49.90	58.30	68.70	78.80	90.65	122.00	140.80	146.70	175.75	205.60	217.35	237.60	246.40	254.70	277.90
Extra Heavy Gun Iron Flanges . .	48.30	51.65	60.60	71.10	82.10	94.05	126.75	147.40	153.50	182.55	217.00	228.70	249.75	260.80	270.00	294.50
Rolled Steel, Extra Heavy				98.60	115.64	136.90	180.95	215.15	222.90	260.00	304.00	333.00	378 00	416.00	432.00	488.00

PRICE LIST

FOR THREADING, MAKING ON, AND REFACING FLANGES ON STRAIGHT PIPE, INCLUDING FLANGE. PER END, NOT INCLUDING PIPE.

Size. . . . . inches	2½	3	3½	4	4½	5	6	7	8	9	10	12	14 O.D.	15 O.D.	16 O.D.	17 O.D.	18 O.D.	20 O.D.	21 O.D.	22 O.D.	24 O.D.
Standard Weight Cast Iron . . .	2.40	2.45	3.00	3.25	4.00	4.30	4.50	5.75	6.55	8.35	9.15	12.45	16.15	19.95	20.85						
Extra Heavy Cast Iron	2.95	3.30	4.25	4.55	5.05	5.65	6.55	8.15	8.75	11.05	12.50	17.50	24.25	27.85	29.90	38.15	38.15				
Extra Heavy Gun Iron	3.20	3.70	4.65	5.05	5.60	6.20	7.45	0.15	10.25	12.25	14.00	19.75	28.10	31.85	34.05	43.85	43.85				

We do not recommend Peened Flanges. Repeated blows of the hammer necessary to peen over the pipe have a tendency to loosen the threaded joints. We consider it better practice to screw the pipe through and reface the end of pipe and flange flush with one another

LENGTH, SIZE, AND NUMBER OF BOLTS REQUIRED FOR DIFFERENT FLANGED JOINTS.

SIZE		Inches	2½	3	3½	4	4½	5	6	7	8	9	10	12	14 O.D.	15 O.D.	16 O.D.	17 O.D.	18 O.D.	20 O.D.	21 O.D.	22 O.D.	24 O.D.
FOR STANDARD WEIGHT SCREWED FLANGE	NO. BOLTS		4	4	4	8	8	8	8	8	8	12	12	12	12	12	16	16	16	20	20	20	20
	SIZE BOLTS	Inches	½	½	½	½	⅝	⅝	⅝	⅝	⅝	⅝	¾	¾	¾	⅞	⅞	⅞	1	1	1	1	1
	LENGTH BOLTS.	"	2	2½	2½	2½	2¾	2¾	2¾	3	3	3	3¼	3½	3½	3¾	3¾	4	4¼	4½	4¾	4¾	5
FOR STANDARD WEIGHT WALMANCO FLANGES	NO. BOLTS							8	8	8	8	12	12	12	12	12	16	16	16	20	20	20	20
	SIZE BOLTS	inches						⅝	⅝	⅝	⅝	⅝	¾	¾	¾	⅞	⅞	⅞	1	1	1	1	1
	LENGTH BOLTS.	"						3¼	3¼	3¾	3¾	3¾	4¼	4¼	4¼	4¾	4¾	5	5¼	5½	5¾	5¾	6
FOR DITTO AGAINST STANDARD WEIGHT FITTINGS	NO BOLTS							8	8	8	8	12	12	12	12	12	16	16	16	20	20	20	20
	SIZE BOLTS	Inches						⅝	⅝	⅝	⅝	⅝	¾	¾	¾	⅞	⅞	⅞	1	1	1	1	1
	LENGTH BOLTS.	"						3¼	3¼	3½	3½	3½	3¾	4	4	4¼	4¼	4½	4¾	5	5¼	5¼	5½

EXTRA HEAVY.

SIZE		Inches	2½	3	3½	4	4½	5	6	7	8	9	10	12	14 O.D.	15 O.D.	16 O.D.	17 O.D.	18 O.D.	20 O.D.	21 O.D.	22 O.D.	24 O.D.
FOR EXTRA HEAVY SCREWED FLANGES	NO. BOLTS		4	8	8	8	8	8	12	12	12	12	16	16	16	20	20	20	24	24	24	28	28
	SIZE BOLTS	Inches	⅝	⅝	⅝	¾	¾	¾	¾	⅞	⅞	⅞	⅞	⅞	⅞	⅞	1	1	1	1⅛	1⅛	1⅛	1⅛
	LENGTH BOLTS.		3	3¼	3¼	3½	3¾	3¾	4	4¼	4½	4¾	5	5¼	5¼	5½	5¾	5¾	6	6½	6¾	6¾	7
FOR WALMANCO FLANGES, EXTRA HEAVY	NO. BOLTS							8	12	12	12	12	16	16	16	20	20	20	24	24	24	28	28
	SIZE BOLTS	inches						¾	¾	⅞	⅞	⅞	⅞	⅞	⅞	⅞	1	1	1	1⅛	1⅛	1⅛	1⅛
	LENGTH BOLTS	"						4½	4½	4¾	5	5¼	5½	5¾	6	6	6¼	6½	6¾	7¼	7½	7½	7¾
FOR DITTO AGAINST EXTRA HEAVY FITTINGS	NO. BOLTS							8	12	12	12	12	16	16	16	20	20	20	24	24	24	28	28
	SIZE BOLTS	Inches						¾	¾	⅞	⅞	⅞	⅞	⅞	⅞	⅞	1	1	1	1⅛	1⅛	1⅛	1⅛
	LENGTH BOLTS.	"						4¼	4¼	4½	4¾	5	5¼	5½	5½	5¾	6	6¼	6½	6¾	7	7	7½

COPPER, RAINBOW, AND BESTOSKING GASKETS.

COPPER GASKET.

RAINBOW GASKET.

BESTOSKING WIRE INSERTION

COPPER, RAINBOW, AND BESTOSKING GASKETS FOR STANDARD WEIGHT FLANGED FITTINGS.

SIZE PIPE	2½	3	3½	4	4½	.5	6	7	8	9	10	12	14 O.D.	15 O.D.	16 O.D.	17 O.D.	18 O.D.	20 O.D.	21 O.D.	22 O.D.	24 O.D.
DIAM. OF HOLE	2⅝	3⅛	3⅝	4⅛	4⅝	5⅛	6⅛	7⅛	8⅛	9⅛	10⅛	12⅛	13¼	14¼	15¼	16¼	17¼	19¼	20¼	21¼	23¼
OUTSIDE DIAM. GASKET	4⅞	5⅜	6⅜	6⅞	7	7¾	8¾	10	11	12½	13⅜	16⅛	17	17¾	19	20	21⅝	23¼	23¾	26	28
COPPER GASKETS, EACH	.26	.30	.43	48	.43	.53	.61	77	.86	1.14	1.20	1.78	1.78	1.66	2.02	2.13	2.68	2.67	2.42	3.53	3.83
BESTOSKING OR RAINBOW GASKETS, EACH	.12	14	17	20	.19	.21	.24	.33	.35	.42	.47	.60	.68	.75	.80	.89	.87	1.05	1.00	1.25	1.35

COPPER, RAINBOW, AND BESTOSKING GASKETS FOR EXTRA HEAVY FLANGED FITTINGS.

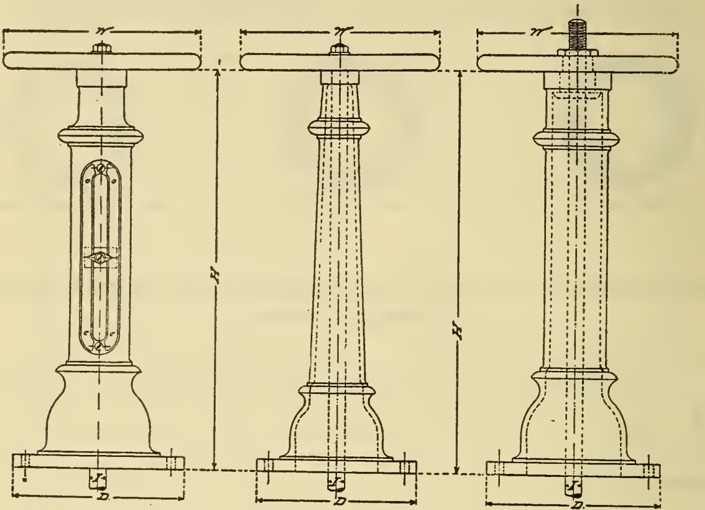
SIZE PIPE	2½	3	3½	4	4½	5	6	7	8	9	10	12	14 O.D.	15 O.D.	16 O.D.	17 O.D.	18 O.D.	20 O.D	21 O.D.	22 O.D.	24 O.D.
DIAM. OF HOLE	2⅝	3⅛	3⅝	4⅛	4⅝	5⅛	6⅛	7⅛	8⅛	9⅛	10⅛	12⅛	13¼	14¼	15¼	16¼	17¼	19¼	20¼	21¼	23¼
OUTSIDE DIAM. GASKET	5⅛	5⅞	6½	7	7⅝	8⅝	9¾	10⅞	12	13	14¼	16¾	18	19	19⅞	21¼	23½	25½	25½	27½	30
COPPER GASKETS, EACH	.30	.39	.45	.50	.57	.69	.90	1.06	1.23	1.34	1.58	2.10	2.33	2.48	2.56	2.94	3.82	4.39	3 77	4.79	5.65
BESTOSKING OR RAINBOW GASKETS, EACH	.12	.14	.17	.21	21	.26	.33	.40	.47	49	.59	.75	90	1.00	1.08	1.22	1.50	1.50	1.50	1.80	1.85

NOTE — Prices on Rainbow Gaskets are for 1/16″ thick. Gaskets go inside bolt holes.
Prices on Bestosking Gaskets are for ⅛″ thick.

GALVANIZING.

We have recently installed at our factory a **COMPLETE GALVANIZING PLANT,** where we are prepared to galvanize castings of all descriptions, also pipe and tubes of all sizes and lengths.

FLOOR STANDS.



Indicator Stand

Ordinary Stand

Stand + Rising Spindle

FLOOR STANDS.—FIG. 119 A.

DIMENSIONS.

NUMBER	1	2	3	4	5
HEIGHT, H	16½″	21½″	30″	39″	....
DIAMETER OF WHEEL, W	5¾″	14½″	21″	30″	....
DIAMETER OF SPINDLE, I	1⅛″	1⅛″	1¼″	1¼″	....
DIAMETER OF FLANGE, D	10″	10″	12″	13″	....
NUMBER OF BOLTS IN FLANGE	4	4	4	4	....
SIZE OF BOLT HOLES	⅝	⅝	¾	¾	....
PRICE, NO WHEELS OR STEM, PAINTED	$5.35	$6.60	$11.00	$12.75	....
DITTO FINISHED	14.70	17.30	27.15	32.25	....
WHEELS PAINTED EXTRA	1.05	3.65	5.85	11.00	....
WHEELS FINISHED RIM EXTRA	3.65	7.45	13.20	19.05	....

Stems extra, prices to suit different requirements.

Indicator Stands and Rising Stem Stands, prices on application.

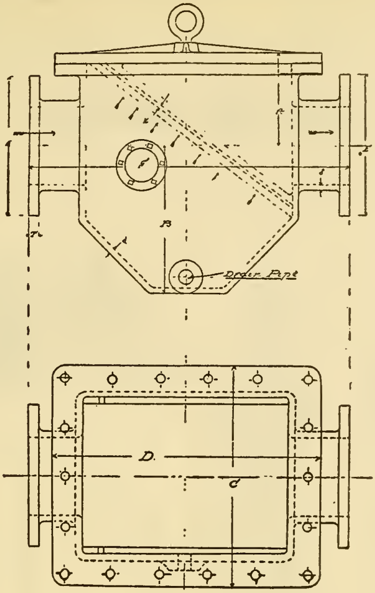


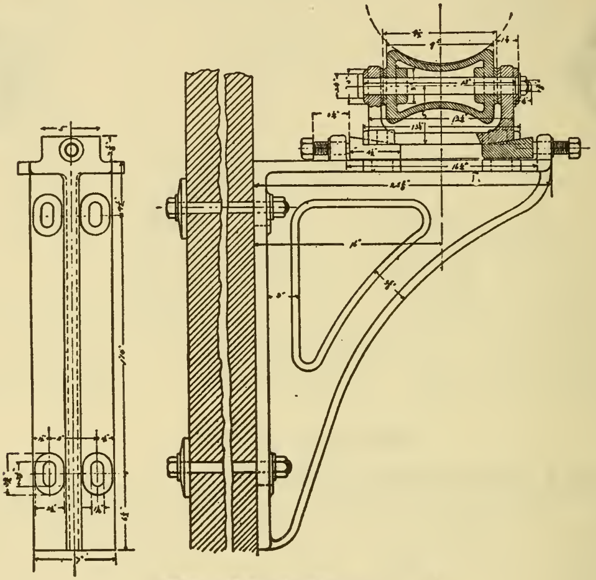
FIG. 119B.

PRICE LIST

CAST-IRON SCREEN BOXES OR FISH TRAPS FOR SUCTION PIPES.

SIZE OF PORT . . . . . Inches	3	4	5	6	8	10	12	14	16	18	20	22	24
FACE TO FACE FLANGED ENDS . . . . "		21		25	33½		38	45					
CENTER OF PIPE TO TOP OF TRAP . . "		6⅝		7⅝	8⅞		11⅜	12⅝					
CENTER OF PIPE TO BOTTOM OF TRAP . . "		10⅝		11⅝	14½		18½	22					
WIDTH OF CAP FLANGE . . . . "		13		17	19¾		29¾	35⅞					
LENGTH OF CAP FLANGE . . . . "		17		21	28		31	39					
THICKNESS OF BRASS SCREEN . . . . . "		¼	¼	¼	⅝	⅜	⅜	½					
NUMBER OF HOLES IN SCREEN		253		462	748		1817	1005					
SIZE OF HOLES IN SCREEN . . . . . . Inches	⅜	⅜	⅜	⅜	⅜	⅜	⅜	⅝					
SIZE OF DRAIN PIPE . . . . "	1	1	1	1	1¼	1¼	1¼	1½					
DIAMETER OF END FLANGES . . . . . . "	7½	9	10	11	13½	16	19	21	23½	25	27½	29½	31½
DIAMETER OF BOLT CIRCLE . . . . . . "	6	7½	8½	9½	11¾	14¼	17	18¾	21¼	22¾	25	27¼	29¼
NUMBER OF BOLTS	4	8	8	8	8	12	12	12	16	16	20	20	20
SIZE OF BOLTS . . . . Inches	½	½	⅝	⅝	⅝	¾	¾	⅞	⅞	1	1	1	1
PRICE, EACH		32.00		44.00	88.00	132.00	165.00	240.00	310.00		450.00		

CAST-IRON BRACKETS.



WALWORTH HEAVY WALL BRACKET. FIG. 119 C.

WALWORTH HEAVY WALL BRACKET.

DIMENSIONS.

Center of pipe to wall	16	inches.
Vertical Distance between wall bolts	22	„
Distance from end of Bracket to wall	25⅝	„

PRICE, EACH, INCLUDING BACK WASHERS AND WALL BOLTS, $38.00.

In ordering, give thickness of wall and size of pipe to be supported.

The above bracket is made heavy and strong, and is intended for a general purpose bracket. As shown by the cut, the roll is adjustable to suit any irregularities in the run of the pipe or drum to be supported.

CAST IRON BRACKETS.

WALWORTH UNIVERSAL BRACKETS.—FIG. 119 D.

SIZE NO.	1	2	3	4
CENTER OF PIPE TO WALL .... INCHES	12 to 15	15 to 18	18 to 21	21 to 24
DISTANCE BETWEEN WALL BOLTS	13⅜	13⅜	16¼	17¼
PRICE, INCLUDING WALL BOLTS	17.60	19.10	22.30	26.40

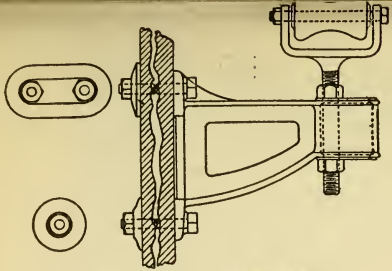


FIG. 119 D. WALWORTH UNIVERSAL BRACKET.

CAST IRON ROLLERS AND CHAIRS.

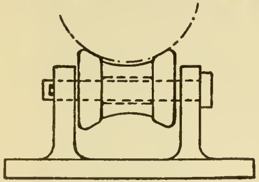


FIG. 119 E. SIDE ELEVATION.

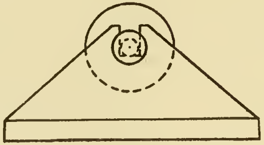


FIG. 119 E. END ELEVATION.

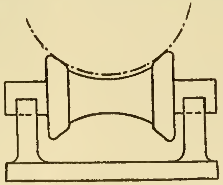


FIG. 119 F. SIDE ELEVATION.

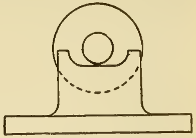


FIG. 119 F. END ELEVATION.

ROLLERS AND CHAIRS.—FIG. 119 E.

SIZE PIPE	6	7	8	9	10	12	14 O. D.	15 O. D.	16 O. D.
BASE	10 x 10	10 x 10	14 x 14	14 x 14	14 x 14	19 x 19	19 x 19	19 x 19	19 x 19
FLOOR TO CENTER OF PIPE	8	8⅝	10¾	11⅜	12⅛	15⅝	16¼	16⅞	17½
PRICE, EACH	5.40	5.40	8.05	8.05	8.05	13.95	13.95	14.65	14.65

ROLLERS AND CHAIRS.—FIG. 119 F.

SIZE PIPE	6	7	8	9	10	12	14 O. D.	15 O. D.	16 O. D.
BASE	9 x 9	9 x 9	11 x 11	11 x 11	11 x 11	15 x 15	15 x 15	15 x 15	15 x 15
FLOOR TO CENTER OF PIPE	8	8⅝	10¾	11⅜	12⅛	15⅝	16¼	16⅞	17½
PRICE, EACH	2.05	2.05	3.25	3.25	3.25	6.60	6.60	6.60	6.60

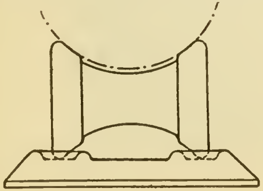


FIG. 119 G. SIDE ELEVATION.

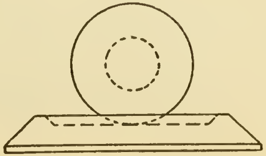


FIG. 119 G. END ELEVATION.

ROLLERS AND PLATES.—FIG. 119 G.

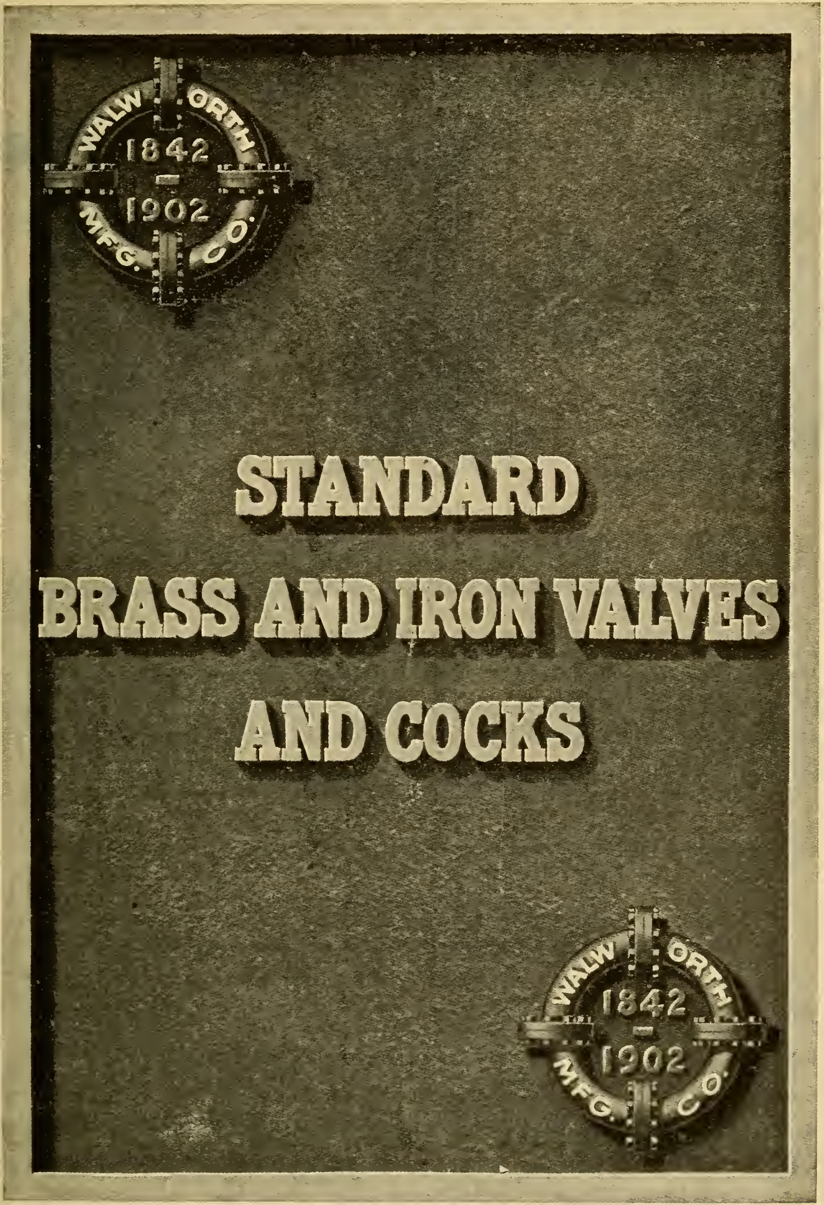
SIZE PIPE	6	7	8	9	10	12	14 O. D.	15 O. D.	16 O. D.
BASE PLATE	8 x 8	8 x 8	10 x 10	10 x 10	10 x 10	14 x 14	14 x 14	14 x 14	14 x 14
FLOOR TO CENTER PIPE	7	7¾	9	9½	10¼	11	12	12½	13
PRICE, EACH	1.35	1:35	2.05	2.05	2.05	4.90	4.90	4.90	4.90

CAST-IRON FLANGED PIPES.

WEIGHT OF A LINEAL FOOT.

	THICKNESS OF METAL IN INCHES.									
	¼	⅜	½	⅝	¾	⅞	1	1⅛	1¼	1½
Bore in Inches.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.
2	5.52	8.74	12.27	16.11	20.25	24.70	29.45	34.52	39.88	51.54
2½	6.75	10.58	14.73	19.18	23.95	28.99	34.36	40.04	46.02	58.91
3	7.93	12.43	17.18	22.24	27.61	32.29	39.27	45.56	52.16	66.27
3½	9.20	14.27	19.64	25.31	31.29	37.58	44.18	51.08	58.29	73.63
4	10.43	16.11	22.09	28.38	34.98	41.88	49.09	56.60	64.43	80.99
4½	11.66	17.95	24.54	31.45	38.66	46.18	54.00	62.13	70.56	88.36
5	12.89	19.79	27.00	34.52	42.34	50.47	58.91	67.65	76.70	95.72
5½	14.11	21.63	29.45	37.58	46.02	54.76	63.81	73.17	82.84	103.08
6	15.34	23.47	31.91	40.65	49.70	59.06	68.72	78.69	88.97	110.45
7	17.79	27.15	36.82	46.79	57.06	67.65	78.54	89.74	101.24	125.17
8	20.25	30.83	41.72	52.92	64.43	76.24	88.36	100.78	113.52	139.90
9	22.70	34.52	46.63	59.06	71.79	84.83	98.18	111.83	125.79	154.63
10	25.16	38.20	51.54	65.19	79.15	93.42	107.99	122.87	138.06	.....
11	27.61	41.88	56.45	71.33	86.52	102.01	117.81	133.92	150.33	.....
12	30.07	45.56	61.36	77.47	93.88	110.60	127.63	144.96	162.60	.....
13	32.52	49.24	66.27	83.60	101.24	119.19	137.45	156.01	174.87	.....
14	34.98	52.92	71.18	89.74	108.61	127.78	147.26	167.05	187.15	......
15	....	56.60	76.09	95.87	115.97	136.37	157.08	178.10	199.42	.....
16	....	60.29	80.99	102.01	123.33	144.96	166.90	189.14	211.69	.....
18	....	67.65	90.81	114.28	138.06	162.14	186.53	211.23	236.23	.....
20	....	....	100.63	126.55	152.79	179.32	206.17	233.32	260.78	.....
22	....	...	110.45	138.83	167.51	196.50	225.80	255.41	285.32	.....
24	....	....	120.26	151.10	182.24	213.68	245.44	277.50	309.87	.....

NOTE. For each joint add a foot in length of the pipe.



WALWORTH MFG. CO.
1842 – 1902

STANDARD BRASS AND IRON VALVES AND COCKS

WALWORTH MFG. CO.
1842 – 1902

STANDARD BRASS VALVES. STANDARD WEIGHT.

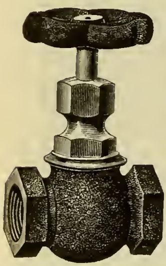


FIG. 120. GLOBE VALVE, SCREWED.

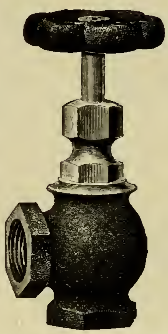


FIG. 121. ANGLE VALVE, SCREWED.

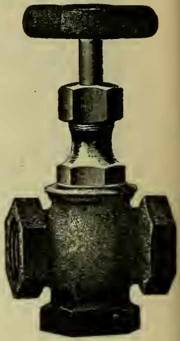


FIG. 121A. CROSS VALVE.

GLOBE, ANGLE, AND CROSS VALVES. SCREWED.—FIGS. 120, 121, AND 121A.

SIZE	1/8	1/4	3/8	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3	3 1/2	4
FIG. 120 EACH	.72	.72	.77	1.00	1.26	1.80	2.52	3.50	5.30	10.00	14.40	26.50	36.00
FIG. 121 EACH	.72	.72	.77	1.00	1.26	1.80	2.52	3.50	5.30	10.00	14.40	26.50	36.00
FIG. 121A EACH	....	1.25	1.25	1.50	2.00	2.50	3.50	5.00	8.00	16.00	24.00	....	....

DIMENSIONS.

GLOBE, ANGLE, AND CROSS VALVES.—FIGS. 120, 121, AND 121A.

SIZE	1/8	1/4	3/8	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3	3 1/2	4
FACE TO FACE FIG. 120	1 5/8	1 7/8	2 1/8	2 5/16	2 3/4	3 3/16	3 9/16	4	4 3/4	5 11/16	6 7/8	8 1/4	9 1/4
CENTER TO INLET FIG. 121	15/16	15/16	1 3/32	1 3/16	1 7/16	1 11/16	1 7/8	2 1/8	2 5/8	3 1/4	3 15/16	4	5 1/8
CENTER TO OUTLET FIG. 121	7/8	7/8	31/32	1 3/16	1 7/16	1 11/16	1 7/8	2 1/8	2 5/8	3 1/8	3 9/16	4	5 1/8
FACE TO FACE FIG. 121A	1 3/4	1 3/4	2 1/8	2 3/8	2 5/8	3 3/16	3 11/16	4	4 5/8	6 1/4	7 1/8	8	10 1/4
CENTER TO INLET FIG. 121A	7/8	7/8	31/32	1 3/16	1 7/16	1 11/16	1 7/8	2 1/8	2 5/8	3 1/4	3 15/16	....	....

STANDARD BRASS VALVES. STANDARD WEIGHT.

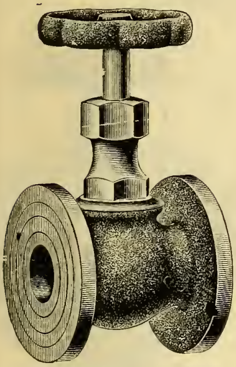


FIG. 122. GLOBE VALVE, FLANGED.

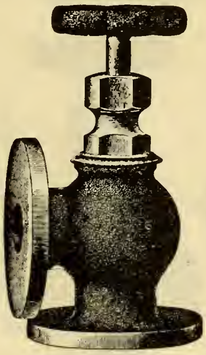


FIG. 122 A. ANGLE VALVE, FLANGED.

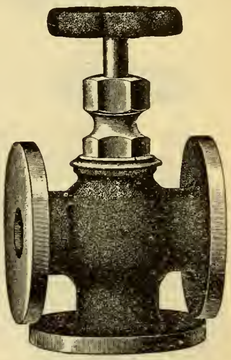


FIG. 122 B. CROSS VALVE, FLANGED.

GLOBE, ANGLE, AND CROSS VALVES, FLANGED.—FIGS. 122, 122 A, 122 B.

SIZE	⅜	½	¾	1	1¼	1½	2	2½	3	3½	4
FIG. 122, EACH	3.00	4.50	5.00	6.75	8.50	10.50	16.00	23.00	35.00	50.00	70.00
FIG. 122 A, EACH	3.00	4.50	5.00	6.75	8.50	10.50	16.00	23.00	35.00	50.00	70.00
FIG. 122 B, EACH	....	....	....	9.00	12.00	15.75	22.00	33.00	45.00	75.00	100.00

DIMENSIONS.

GLOBE, ANGLE, AND CROSS VALVES, FLANGED.—FIGS. 122, 122 A, 122 B.

SIZE	½	¾	1	1¼	1½	2	2½	3	3½	4
FACE TO FACE ... FIG. 122	2⅝	3	3 7/16	3 13/16	4⅝	5⅜	5 15/16	6 9/16	8¼	8⅞
CENTER TO INLET ... FIG. 122 A	1 15/16	2¼	2¾	2⅞	3	4⅛	4⅜	5	5½	6
CENTER TO OUTLET .. FIG. 122 A	1⅞	2¼	2¾	2¾	3	3¼	4	4	5	5
CENTER TO INLET ... FIG. 122 B	1 15/16	2¼	2¾	2⅞	3	4½	4⅜	5	5½	6
FACE TO FACE ... FIG. 122 B	3¾	4½	5½	5½	6	6½	8	8	10	10
DIAMETER OF FLANGES	3	3½	4	4½	5	6	7	7½	8½	9
DIAMETER OF BOLT CIRCLE	2 1/16	2½	2¾	3¼	3⅝	4⅜	5½	6	7	7½
NO. OF BOLTS	4	4	4	4	4	4	4	4	4	8
SIZE OF BOLTS	⅜	⅜	7/16	7/16	½	½	½	½	½	½

STANDARD BRASS VALVES. EXTRA HEAVY.

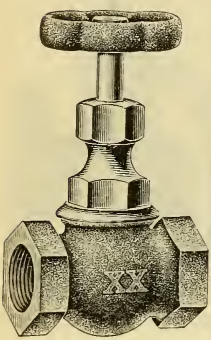


FIG. 122 C. GLOBE VALVE.

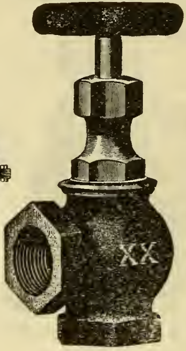


FIG. 122 D. ANGLE VALVE.

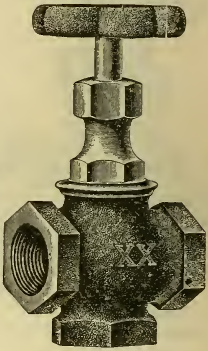


FIG. 122 E. CROSS VALVE.

GLOBE, ANGLE, AND CROSS VALVES. EXTRA HEAVY.—FIGS. 122 C, 122 D, 122 E.

SIZE	¼	⅜	½	¾	1	1¼	1½	2	2½
FIG. 122 C, EACH	1.25	1.45	1.85	2.50	3.50	5.25	7.00	10.50	20.00
FIG. 122 D, EACH	1.25	1.45	1.85	2.50	3.50	5.25	7.00	10.50	20.00
FIG. 122 E, EACH	2.20	2.40	2 80	4.00	5.00	7.20	10.00	16.00	....

DIMENSIONS.

GLOBE, ANGLE, AND CROSS VALVES.—FIGS. 122 C, 122 D, 122 E.

SIZE	¼	⅜	½	¾	1	1¼	1½	2	2½
FACE TO FACE ..... FIG. 122 C	2	2 3/16	2½	3⅛	3½	3 15/16	4¼	5⅛	6
CENTER TO INLET ..... FIG. 122 D	1	1 3/16	1¼	1½	1¾	2	2¼	2½	3⅛
CENTER TO OUTLET ..... FIG. 122 D	1	1⅛	1¼	1½	1¾	2	2¼	2½	3⅜
FACE TO FACE ..... FIG. 122 E	2	2¼	2½	3	3½	4	4½	5	..
CENTER TO INLET ..... FIG. 122 E	1	1 3/16	1¼	1½	1¾	2	2¼	2½	..

STANDARD BRASS VALVES. EXTRA HEAVY.

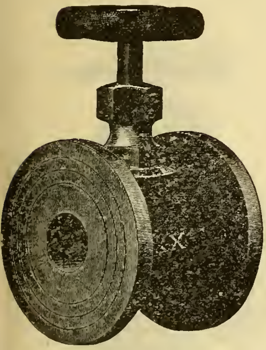


FIG. 122 F. GLOBE VALVE, FLANGED ENDS.

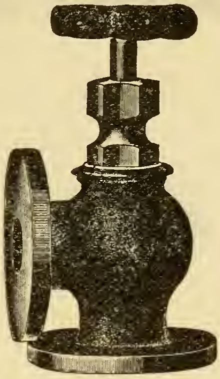


FIG. 122 G. ANGLE VALVE, FLANGED ENDS.

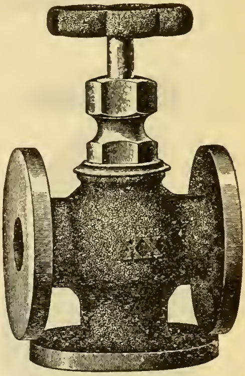


FIG. 122 H. CROSS VALVE, FLANGED ENDS.

GLOBE, ANGLE, AND CROSS VALVES, EXTRA HEAVY. FLANGED.

FIGS. 122 F, 122 G, 122 H.

SIZE	$\frac{3}{4}$	1	$1\frac{1}{4}$	$1\frac{1}{2}$	2	$2\frac{1}{2}$
FIG. 122 F, EACH	8.00	9.50	13.50	16.50	24.00	45.00
FIG. 122 G, EACH	8.00	9.50	13.50	16.50	24.00	45.00
FIG. 122 H, EACH	12.80	13.30	18.90	23.10	36.00	67.50

DIMENSIONS.

GLOBE, ANGLE, AND CROSS VALVES, EXTRA HEAVY. FLANGED.

FIGS. 122 F, 122 G, 122 H.

SIZE	$\frac{3}{4}$	1	$1\frac{1}{4}$	$1\frac{1}{2}$	2	$2\frac{1}{2}$
FACE TO FACE .... FIG. 122 F	$2\frac{15}{16}$	$3\frac{7}{16}$	$3\frac{7}{8}$	$4\frac{5}{8}$	$5\frac{1}{2}$	6
CENTER TO INLET .... FIG. 122 G	$2\frac{5}{16}$	$2\frac{5}{8}$	3	3	4	$4\frac{1}{2}$
CENTER TO OUTLET .... FIG. 122 G	$2\frac{5}{16}$	$2\frac{1}{2}$	3	3	$3\frac{3}{8}$	4
FACE TO FACE .... FIG. 122 H	$4\frac{5}{8}$	5	6	6	$6\frac{3}{4}$	8
CENTER TO INLET .... FIG. 122 H	$2\frac{5}{16}$	$2\frac{5}{8}$	3	3	4	$4\frac{1}{2}$
*DIAMETER OF FLANGES	$3\frac{1}{2}$	4	$4\frac{1}{2}$	5	6	7

* These diameters are the diameters of Standard Weight Iron Flanges. Customers should in every case specify the bolt circle and number of bolts.

STANDARD BRASS VALVES. EXTRA HEAVY.

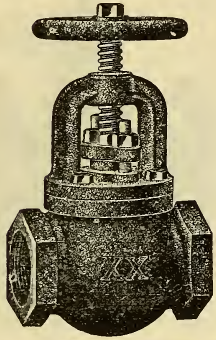


FIG. 122 J. GLOBE VALVE, SCREWED ENDS.

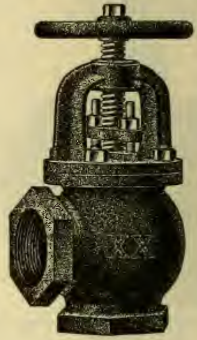


FIG. 122 K. ANGLE VALVE, SCREWED ENDS.

GLOBE AND ANGLE VALVES, SCREWED, EXTRA HEAVY.—FIGS. 122 J AND 122 K.

YOKE TOP.

SIZE	2	2½	3	3½	4	4½	5	6
SCREWED ENDS. FIGS. 122 J AND 122 K, EACH	13.25	16.75	22.25	27.75	38.00	44.00	61.00	89.00

DIMENSIONS.

GLOBE AND ANGLE VALVES, EXTRA HEAVY, SCREWED.—FIGS. 122 J AND 122 K.

YOKE TOP.

SIZE	2	2½	3	3½	4	4½	5	6
FACE TO FACE .... FIG. 122 J	5⅞	6⅞	8	8¼	9¼	10	11⅝	13¼
CENTER TO INLET .... FIG. 122 K	2¾	3½	3⅞	4¼	4¾	5	5½	6⅜
CENTER TO OUTLET .... FIG. 122 K	2¾	3½	3⅞	4¼	4¾	5	5½	6⅜

STANDARD BRASS VALVES. EXTRA HEAVY.

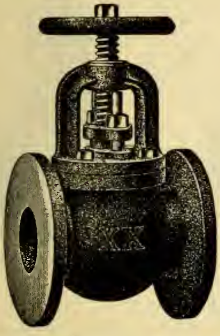


FIG. 122 L. GLOBE VALVE, FLANGED ENDS.

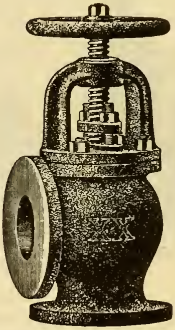


FIG. 122 M. ANGLE VALVE, FLANGED.

GLOBE AND ANGLE VALVES, FLANGED, EXTRA HEAVY.—FIGS. 122 L AND 122 M.

YOKE TOP.

SIZE	2	2½	3	3½	4	4½	5	6	7	8
FLANGED ENDS .... EACH	21.25	24.75	31.50	38.25	48.50	55.00	76.00	106.00	145.00	191.00

DIMENSIONS.

GLOBE AND ANGLE VALVES, EXTRA HEAVY, FLANGED.—FIGS. 122 L AND 122 M.

YOKE TOP.

SIZE	2	2½	3	3½	4	4½	5	6	7	8
FACE TO FACE......... FIG. 122 L	6½	7½	8	8⅝	9⅝	10	12	12⅝	14	16½
CENTER TO INLET....FIG. 122 M	4¼	4½	5	5¼	6	6	6½	7	8½	9
CENTER TO OUTLET..FIG. 122 M	3½	4	4	4¼	5	5	5½	6½	8	8½
*DIAMETER OF FLANGES............	6	7	7½	8½	9	9¼	10	11	12½	13½

* These diameters are the diameters of Standard Weight Iron Flanges; customers should specify in every case the bolt circle and number of bolts.

STANDARD BRASS VALVES.

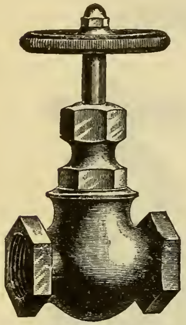


FIG. 122 N. WITH BRASS WHEEL.

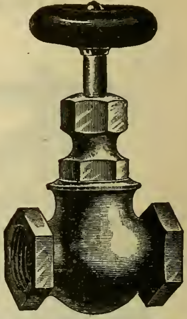


FIG. 122 P. WITH WOOD WHEEL.

FINISHED GLOBE AND ANGLE VALVES.

BRASS WHEELS.

SIZE	⅜	½	¾	1	1¼	1½	2
EACH	3.00	3.15	3.50	4.25	5.60	7.00	10.25

FINISHED GLOBE AND ANGLE VALVES.

WOOD WHEELS.

SIZE	⅜	½	¾	1	1¼	1½	2
EACH	2.00	2.15	2.50	3.25	4.35	5.75	9.00

EXTRA HEAVY FINISHED GLOBE AND ANGLE VALVES.

BRASS WHEELS.

SIZE	½	¾	1	1¼	1½	2
EACH	4.00	4.75	5.95	8.35	10.50	15.45

EXTRA HEAVY FINISHED GLOBE AND ANGLE VALVES.

WOOD WHEELS.

SIZE	½	¾	1	1¼	1½	2
EACH	3.00	3.75	4.95	7.10	9.25	14.20

Finished Valves are furnished to order only.
Prices for Finished Flanged Valves on application.

STANDARD BRASS VALVES.

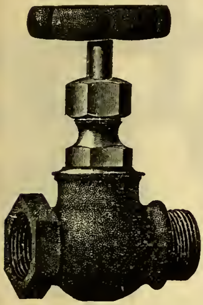


FIG. 124.
M AND F GLOBE VALVE.

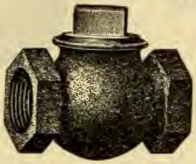


FIG. 125.
HORIZONTAL CHECK VALVE.

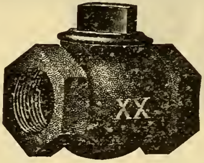


FIG. 125 A.
EXTRA HEAVY CHECK VALVE.

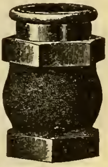


FIG. 126.
VERTICAL CHECK VALVE.

M. AND F. GLOBE VALVES.—FIG. 124.

SIZE	½	¾	1	1¼	1½	2	2½	3
EACH	1.50	2.25	3.00	4.50	6.75	10.00		

HORIZONTAL CHECK VALVES.—FIG. 125.

SIZE	⅛	¼	⅜	½	¾	1	1¼	1½	2	2½	3	3½	4
EACH —FIG. 125	.65	.65	.70	.90	1.15	1.60	2.25	3.15	4.75	9.00	13.00	24.00	32.50
EACH —FIG. 125A		1.10	1.30	1.65	2.20	3.00	4.75	6.25	9.50	18.50	25.00	47.00	60.00

HORIZONTAL CHECK VALVES.—FLANGED. NOT ILLUSTRATED.

SIZE	1	1¼	1½	2	2½	3	3½	4
DIAMETER OF FLANGES	4	4½	5	6	7	7½	8½	9
FACE TO FACE	3 7/16	3 13/16	4⅝	5⅜	5 15/16	6 9/16	8¼	8⅞
EACH	6.50	8.25	10.15	15.50	22.00	33.50	47.50	66.50

FINISHED HORIZONTAL CHECK VALVES.—STANDARD WEIGHT. FIG. 125.

SIZE	⅜	½	¾	1	1¼	1½	2
EACH	2.00	2.15	2.50	3.25	4.35	5.75	9.00

VERTICAL CHECK VALVES.—FIG. 126.

SIZE	¼	⅜	½	¾	1	1¼	1½	2	2½	3	3½	4
EACH	.72	.77	1.00	1.26	1.80	2.52	3.50	5.30	10.00	14.40	26.50	36.00

STANDARD BRASS VALVES.

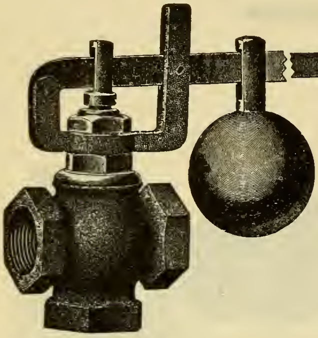


FIG. 129. GLOBE SAFETY VALVE.

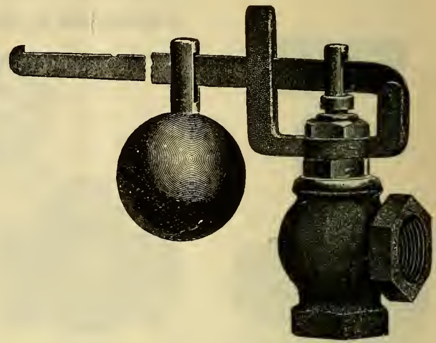
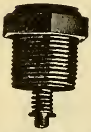


FIG. 130. ANGLE SAFETY VALVE.

GLOBE AND ANGLE SAFETY VALVES.—FIGS. 129 AND 130.

SIZE	⅜	½	¾	1	1¼	1½	2	2½	3
EACH	2.50	3.25	3.90	4.70	7.15	9.00	12.50	22.50	33.50



IG. 131 LOW-PRESSURE SAFETY VALVE.

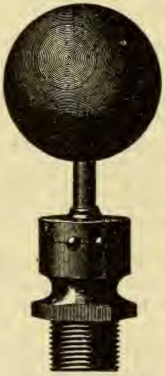


FIG. 132. LOW-PRESSURE SAFETY VALVE.

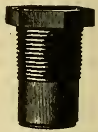


FIG. 133. VACUUM VALVE.

LOW-PRESSURE SAFETY VALVES.—FIG. 131.

SIZE	½	¾	1	1¼	1½	2
EACH	1.50	2.00	2.50	3.00	3.75	5.50

LOW-PRESSURE SAFETY VALVES.—FIG. 132.

SIZE	½	¾	1	1¼	1½	2
EACH	1.50	2.25	3.00	4.00	5.60	8.25

VACUUM VALVES —FIG. 133.

SIZE	½	¾	1	1¼	1½	2
EACH	1.50	2.00	2.50	3.00	3.75	5.50

STANDARD BRASS VALVES.

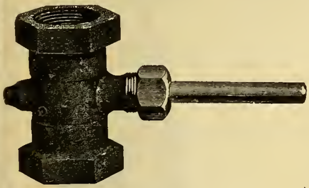


FIG. 134. BUTTERFLY VALVE.

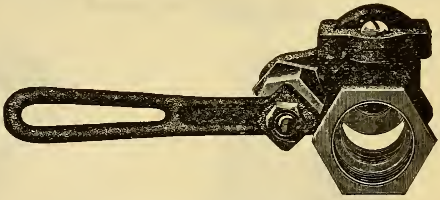


FIG. 134 A. LEVER THROTTLE VALVE.

BUTTERFLY VALVES.—FIG. 134.

SIZE	¾	1	1¼	1½	2	2½	3
EACH	3.10	4.40	5.65	6.75	10.00	13.75	21.00

LEVER THROTTLE VALVES.—FIG. 134 A.

SIZE	¾	1	1¼	1½	2	2½	3	3½	4
BRASS, EACH	1.80	2.50	3.50	5.00	7.50	13.50	19.00	...	....
IRON BODY, EACH	....	....	....	....	....	12.00	15.00	18.00	21.00

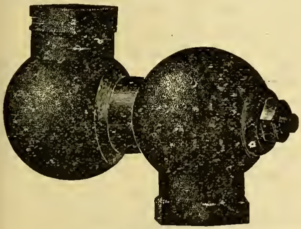


FIG. 134 B. STEAM SWING JOINT.

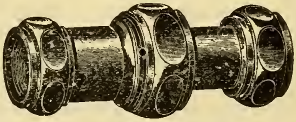


FIG. 134 C. EXPANSION JOINT.

STEAM SWING JOINTS, ROUGH.—FIG. 134 B.

SIZE	¼	⅜	½	¾	1	1¼	1½	2
EACH	1.00	1.25	1.75	2.40	3.50	4.50	6.25	9.00

BRASS EXPANSION JOINTS.—FIG. 134 C.

SIZE	½	¾	1	1¼	1½	2	2½	3
EASTERN TRAVERSE	4	4½	4¾	4¾	5	5½	5¾	6½
EACH	3.80	4.00	4.90	6.30	7.40	9.10	24.00	30.00
WESTERN TRAVERSE	2	2¼	2¼	2¼	2¼	2½	2½	2¾
EACH	1.50	2.20	2.75	4.00	5.00	8.00	17.50	24.00

STANDARD RADIATOR VALVES.

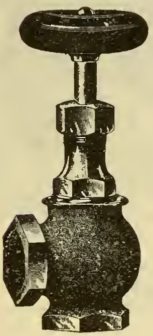


FIG. 143.
RADIATOR VALVES, FEMALE.

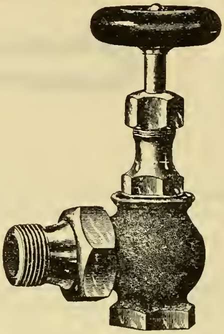


FIG. 144.
RADIATOR VALVES, WITH UNION.

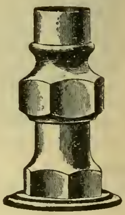


FIG. 144 A.
LOCK SHIELD.

RADIATOR VALVES, BRASS DISC.—FIG. 143.

SIZE	½	¾	1	1¼	1½	2
ROUGH BODY .... EACH	1.40	1.75	2.35	3.25	4.35	6.85
FINISHED BODY .... EACH	2.15	2.50	3.25	4.35	5.75	9.00
ROUGH BODY, NICKEL PLATED ..... EACH	1.70	2.10	2.75	3.70	4.85	7.60
FINISHED BODY, NICKEL PLATED.. EACH	2.45	2.85	3.65	4.80	6.25	9.75
KEYS FOR LOCK SHIELD VALVES........ EACH	.23	.23	.28	.30	.33	.50

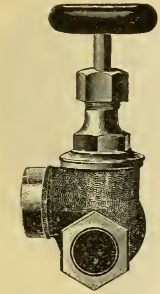
Valves with Lock Shield (like Fig. 144 A), same List price.

RADIATOR VALVES, BRASS DISC, WITH UNION.—FIG. 144.

SIZE	½	¾	1	1¼	1½	2
ROUGH BODY .... EACH	2.15	2.50	3.30	4.40	5.90	9.25
FINISHED BODY .... EACH	3.00	3.40	4.25	5.75	7.75	12.00
ROUGH BODY, NICKEL PLATED ...... EACH	2.50	2.90	3.75	5.00	6.50	10.00
FINISHED BODY, NICKEL PLATED . EACH	3.35	3.80	4.70	6.35	8.35	12.75
KEYS FOR LOCK SHIELD VALVES........ EACH	.23	.23	.28	.30	.33	.50

Valves with Lock Shield (like Fig. 144 A), same List price.

STANDARD CORNER VALVES.



Corner Valves always furnished with Right-hand threads, unless otherwise specified.

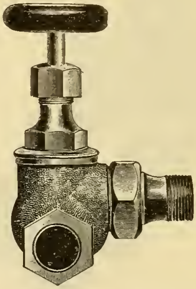


FIG. 145A. OFFSET CORNER VALVE. LEFT-HAND.

FIG. 146A. OFFSET CORNER VALVE, WITH UNION. RIGHT-HAND.

OFFSET CORNER RADIATOR VALVES.—FIG. 145A.

SIZE	¾	1	1¼	1½	2
ROUGH BODY ....EACH	2.50	3.20	4.50	6.25	10.50
ROUGH BODY, NICKEL PLATED.....EACH	2.85	3.65	4.90	6.75	11.00

OFFSET CORNER RADIATOR VALVES, WITH UNION.—FIG. 146A.

SIZE	¾	1	1¼	1½	2
ROUGH BODY........EACH	3.50	4.30	5.85	7.75	12.25
ROUGH BODY, NICKEL PLATED ....EACH	3.80	4.75	6.40	8.10	13.10

Offset Corner Valves, either Fig. 145A or 146A, furnished Right-hand or Left-hand as customers may require. Fig. 145A shows position of Left-hand Valve. Fig. 146A shows position of Right-hand Valve.

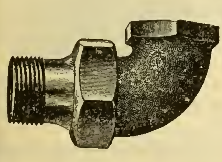


FIG. 147. RADIATOR UNION ELBOW. MALE UNION.

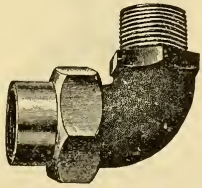


FIG. 148. RADIATOR UNION ELBOW. FEMALE UNION.

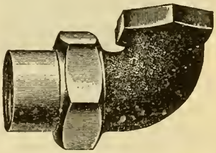


FIG. 148 A. RADIATOR UNION ELBOW. FEMALE BOTH ENDS.

RADIATOR UNION ELBOWS.—FIGS. 147, 148, AND 148 A.

SIZE	½	¾	1	1¼	1½	2
ROUGH BODY ....EACH	1.50	1.75	2.25	2.95	3.70	6.00
NICKEL PLATED ....EACH	1.75	2.00	2.50	3.20	4.00	7.00
FINISHED ....EACH	1.90	2.20	2.75	3.60	4.60	7.50
FINISHED, Nickel Plated ....EACH	2.15	2.40	3.00	3.90	4.85	8.50

STANDARD BRASS COCKS.

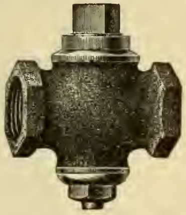


FIG. 149. STEAM COCK, SQUARE HEAD.

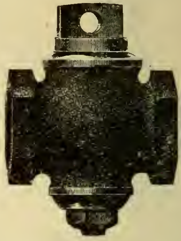


FIG. 150. STEAM COCK, FLAT HEAD.

STEAM COCKS.—FIGS. 149 AND 150.

SIZE	⅛	¼	⅜	½	¾	1	1¼	1½	2	2½	3	3½	4
EACH	.85	.85	1.00	1.25	1.70	2.35	3.70	4.85	7.30	14.50	22.50	38.50	50.00
WITH CHECK	....	....	....	1.40	1.90	2.55	3.95	5.15	7.65	15.00	23.25	39.50	51.50

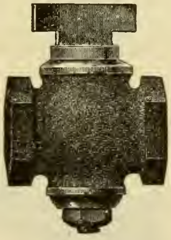


FIG. 151. STEAM COCK, TEE HEAD.
SIZE, 1-4 TO 1-2 ONLY.

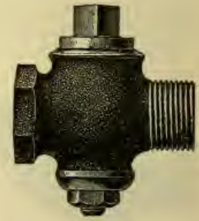


FIG. 151 A. STEAM COCK, MALE AND FEMALE.

STEAM COCKS.—FIGS. 151 AND 151 A.

SIZE	⅛	¼	⅜	½	¾	1	1¼	1½	2	2½	3	3½	4
FIG. 151 .... EACH	....	.85	1.00	1.25	....	....	....	....	....	....	....	....	....
FIG. 151 A ..... EACH	....	1.35	1.45	2.00	2.50	3.00	5.35	6.75	9.85	....	....	....	....

STANDARD BRASS COCKS

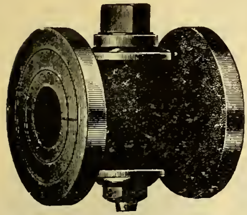


FIG. 152. FLANGED STEAM COCK.

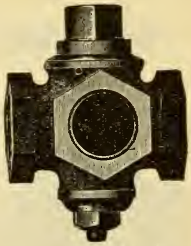


FIG. 153. THREE-WAY COCK.

STEAM COCKS, FLANGED.—FIG. 152.

SIZE	1	1¼	1½	2	2½	3	3½	4
DIAMETER FLANGES	4	4½	5	6	7	7½	8½	9
FACE TO FACE	3⅜	3⅞	4⅝	5¼	6	8	8½	9
EACH	7.30	9.70	11.75	18.00	27.50	43.00	62.00	84.00

THREE-WAY COCKS.—FIG. 153.

SIZE	¼	⅜	½	¾	1	1¼	1½	2	2½	3	3½	4
EACH	2.10	2.10	2.50	3.00	3.75	5.75	7.15	11.00	18.75	26.00	50.00	70.00

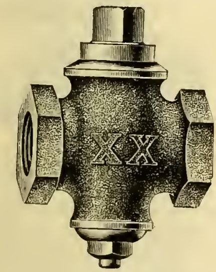


FIG. 154. EXTRA HEAVY STEAM COCK.

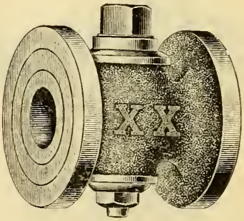


FIG. 155. EXTRA HEAVY STEAM COCK, FLANGED.

STEAM COCKS, EXTRA HEAVY, SCREWED ENDS.—FIGS. 154 AND 155.

SIZE	¼	⅜	½	¾	1	1¼	1½	2	2½	3	3½	4
FIG. 154 ...... EACH	1.30	1.50	2.00	2.85	4.00	6.75	8.50	13.50	25.00	37.00	54.00	75.00
FIG. 155 ...... EACH	....	....	....	....	10.00	14.25	17.25	27.00	41.00	63.00	84.00	120.00

STEAM COCKS, EXTRA HEAVY, FLANGED ENDS.—FIG. 155.

SIZE	1	1¼	1½	2	2½	3	3½	4
DIAMETER FLANGES	4	4½	5	6	7	7½	8½	9
FACE TO FACE	3⅜	3⅞	4⅝	5¼	6	8	8½	9

STANDARD SERVICE AND METER COCKS.

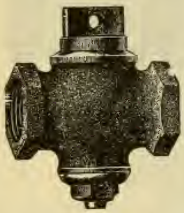


FIG. 158. FLAT HEAD.

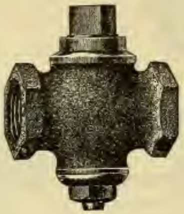


FIG. 159. SQUARE HEAD.

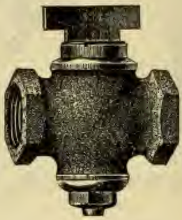


FIG. 160. TEE HEAD.

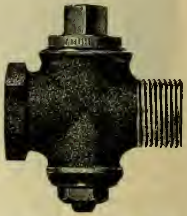


FIG. 161. MALE AND FEMALE.

SERVICE OR GAS COCKS.—FIGS. 158, 159, 160 AND 161.

WITH FLAT OR SQUARE HEADS.

SIZE	1/4	3/8	1/2	3/4	1	1¼	1½	2	2½	3
FIG. 158 and 159, EACH	.75	.85	.95	1.15	1.50	2.25	3.10	5.00	11.00	16.00
FIG. 160 EACH	.75	.85	.95	1.15	1.50	2.25	....	....	....	....
FIG. 161 EACH	1.00	1.00	1.30	1.40	1.95	3.00	4.25	6.00	....	....

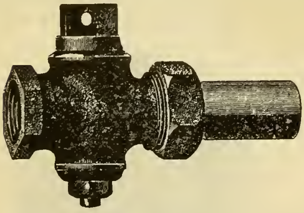


FIG. 162. METER COCK.

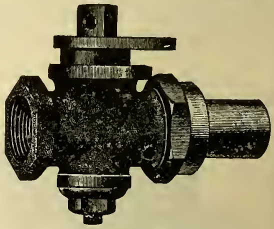


FIG. 163. LOCK METER COCK

METER COCKS.—FIG. 162.

WITH FLAT OR SQUARE HEADS.

SIZE	1/2	3/4	1	1¼	1½	2
EACH	1.40	1.55	2.20	3.40	5.00	7.00

LOCK METER COCKS.—FIG. 163.

WITH FLAT HEADS.

SIZE	1/2	3/4	1	1¼	1½	2
EACH	1.50	1.80	2.50	4.00	5.50	8.00

STANDARD IRON-BODY VALVES.

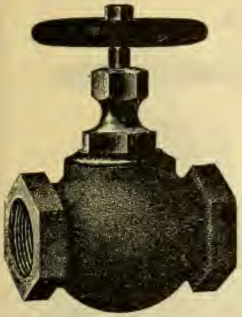


FIG. 164. GLOBE VALVE.

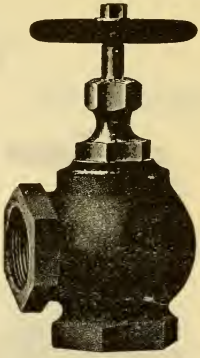


FIG. 165. ANGLE VALVE.

IRON-BODY GLOBE AND ANGLE VALVES.—FIGS. 164 AND 165.

PLAIN TOP, SCREWED ENDS.

SIZE	1	1¼	1½	2	2½	3
EACH	2.25	2 75	3.50	5.40	7.35	9.80
FACE TO FACE ... FIG. 164	3½	4⅛	5	5⅞	6⅞	8
CENTER TO OUTLET ... FIG. 165	1¾	2 1/16	2½	2¾	3½	3⅞
CENTER TO INLET ... FIG. 165	1¾	2 1/16	2½	2¾	3½	3⅞

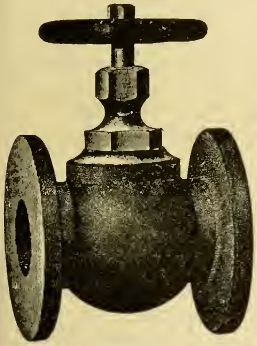


FIG. 166. GLOBE VALVE, FLANGED.

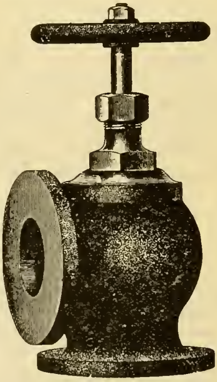


FIG. 167. ANGLE VALVE, FLANGED.

IRON-BODY GLOBE AND ANGLE VALVES.—FIGS. 166 AND 167.

PLAIN TOP, FLANGED ENDS.

SIZE	1¼	1½	2	2½	3
EACH	3.85	4.80	7.00	9 00	12.50
DIAMETER FLANGES	4½	5	6	7	7½
DIAMETER BOLT CIRCLE	3¼	3⅝	4⅜	5½	6
NO. OF BOLTS	4	4	4	4	4
SIZE OF BOLTS	7/16	½	½	½	½
FACE TO FACE ... FIG. 166	4½	5	6¼	7⅛	8
CENTER TO INLET ... FIG. 167	2⅝	3⅛	4¼	4½	5
CENTER TO OUTLET ... FIG. 167	2⅝	3⅛	3½	4	4

STANDARD IRON-BODY VALVES.

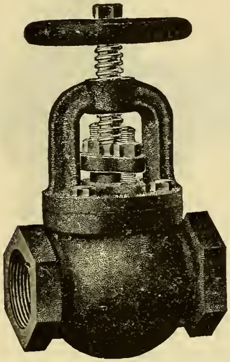


FIG. 168. GLOBE VALVE, SCREWED ENDS.

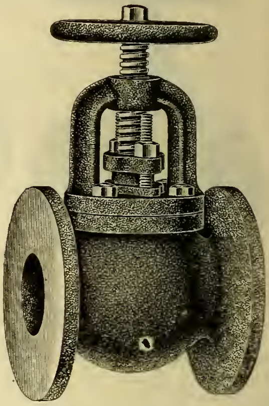


FIG. 169. GLOBE VALVE, FLANGED ENDS.

IRON-BODY GLOBE VALVES, SCREWED ENDS.—FIG. 168.

WITH YOKE TOP.

SIZE	2	2½	3	3½	4	4½	5	6	7	8	10	12
EACH	7.00	9.00	12.50	15.25	19.00	24.00	27.00	37.50	63.00	72.00	114.00	170.00
FACE TO FACE	5⅞	6⅞	8	8¼	9¼	10	11⅜	13¼	14	16⅝	23	

IRON-BODY GLOBE VALVES, FLANGED ENDS.—FIG. 169.

WITH YOKE TOP.

SIZE	2	2½	3	3½	4	4½	5	6	7	8	10	12
DIAMETER OF FLANGES	6	7	7½	8½	9	9¼	10	11	12½	13½	16	19
DIAMETER OF BOLT CIRCLE	4⅝	5½	6	7	7½	7¾	8½	9½	10¾	11¾	14¼	17
NO. OF BOLTS	4	4	4	4	8	8	8	8	8	8	12	12
SIZE OF BOLTS	½	½	½	½	½	⅝	⅝	⅝	⅝	⅝	¾	¾
FACE TO FACE	6¼	7⅛	8	8⅝	9⅝	10	12	12⅞	14	16½	23	27½
EACH	8.60	10.75	15.00	18.50	22.50	27.50	31.00	42.00	68.00	77.00	123.00	187.00

STANDARD IRON-BODY VALVES.

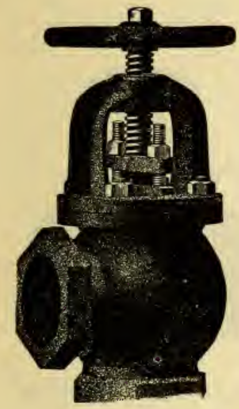


FIG. 170. ANGLE VALVE, SCREWED ENDS.

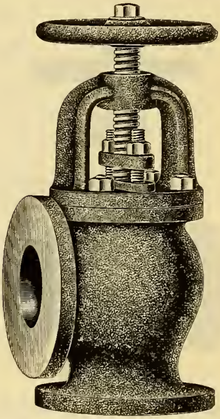


FIG. 171. ANGLE VALVE, FLANGED ENDS.

IRON-BODY ANGLE VALVES, SCREWED ENDS.—FIG. 170.

WITH YOKE TOP.

SIZE	2	2½	3	3½	4	4½	5	6	7	8	10	12
EACH	7.00	9.00	12.50	15.25	19.00	24.00	27.00	37.50	63.00	72.00	114.00	170.00
CENTER TO INLET	2¾	3½	3⅞	4¼	4¾	5	5½	6⅜	7	9	9¾	....
CENTER TO OUTLET	2¾	3½	3⅞	4¼	4¾	5	5½	6⅜	7	9	9¾	....

IRON-BODY ANGLE VALVES, FLANGED ENDS.—FIG. 171.

WITH YOKE TOP.

SIZE	2	2½	3	3½	4	4½	5	6	7	8	10	12
DIAMETER OF FLANGES	6	7	7½	8½	9	9¼	10	11	12½	13½	16	19
DIAMETER OF BOLT CIRCLE	4⅝	5½	6	7	7½	7¾	8½	9½	10¾	11¾	14¼	17
NO. OF BOLTS	4	4	4	4	8	8	8	8	8	8	12	12
SIZE OF BOLTS	½	½	½	½	½	⅝	⅝	⅝	⅝	⅝	¾	¾
CENTER TO INLET	4¼	4½	5	5¼	6	6	6½	7	8½	9	10	13½
CENTER TO OUTLET	3½	4	4	4¼	5	5	5½	6½	8	8½	9½	13½
EACH	8.60	10.75	15.00	18.50	22.50	27.50	31.00	42.00	68.00	77.00	123.00	187.00

STANDARD IRON-BODY VALVES.

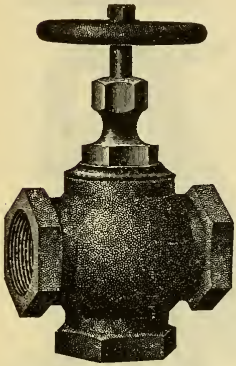


FIG. 172. CROSS VALVE, PLAIN TOP.

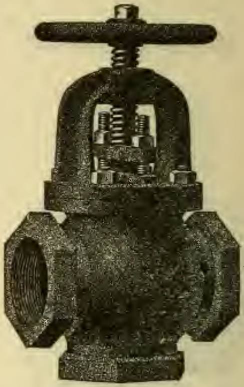


FIG. 173. CROSS VALVE, WITH YOKE.

IRON-BODY CROSS VALVES.—FIG. 172.

PLAIN TOP.

SIZE	2	2½	3
EACH	6.50	9.00	12.50
FACE TO FACE	5½	7	7¾
CENTER TO INLET	2¾	3½	3⅞

IRON-BODY CROSS VALVES.—FIG. 173.

WITH YOKE TOP.

SIZE	2	2½	3	3½	4	4½	5	6	7	8	10	12
EACH	8.50	11.75	16.25	20.00	23.50	30.65	35.25	47.25	78.00	92.00	162.00	240.00
FACE TO FACE	5½	7⅛	7¾	8½	9½	10	11	12¾	14	18	19½	....
CENTER TO INLET	2¾	3½	3⅞	4¼	4¾	5	5½	6⅜	7	9	9¾	....

IRON-BODY CROSS VALVES, FLANGED ENDS.

SIZE	2	2½	3	3½	4	4½	5	6	7	8	10	12
DIAMETER FLANGES	6	7	7½	8½	9	9¼	10	11	12½	13½	16	19
BOLT CIRCLE	4⅜	5½	6	7	7½	7¾	8½	9½	10¾	11¾	14¼	17
NUMBER BOLTS	4	4	4	4	8	8	8	8	8	8	12	12
SIZE BOLTS	½	½	½	½	½	⅝	⅝	⅝	⅝	⅝	¾	¾
CENTER TO INLET	4¼	4½	5	5¼	6	6	6½	7	8½	9	10	13½
CENTER TO OUTLET	3½	4	4	4¼	5	5	5½	6½	8	8½	9½	13½
FACE TO FACE	7	8	8	8½	10	10	11	13	16	17	19	27
WITH PLAIN TOP .... EACH	9.00	11.75	16.50	....	....	....	....	....	....	....	....	....
WITH YOKE TOP .... EACH	11.00	14.50	20.00	25.00	28.50	36.00	41.00	54.00	85.00	100.00	175.00	265.00

STANDARD IRON-BODY VALVES. EXTRA HEAVY.

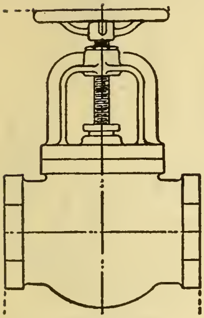


FIG. 173 A.
GLOBE VALVE. EXTRA HEAVY.

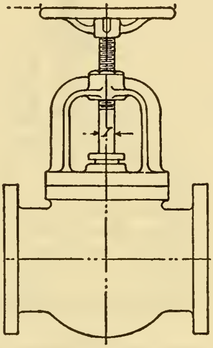


FIG. 173 B.
GLOBE VALVE. EXTRA HEAVY FLANGED.

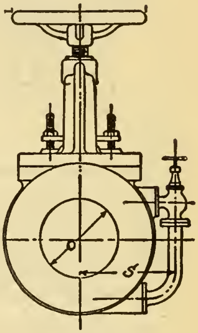


FIG. 173 C.
WITH BY-PASS.

STANDARD IRON-BODY VALVES. EXTRA HEAVY.—FIGS. 173 A, 173 B, AND 173 C.

SIZE	2½	3	3½	4	4½	5	6	7	8	9	10	12
FIG. 173 A. SCREWED ... EACH	29.00	32.00	33.50	35.00	55.00	55.00	79.00	100.00	111.00	....	190.00	285.00
FIG. 173 B. FLANGED ...	31.00	35.00	37.00	39.00	59.00	59.00	84.00	105.00	117.00	....	200.00	300.00
FIG. 173 C. FLANGED WITH BY-PASS ... EACH	....	....	....	....	....	....	....	....	....	....	....	....

DIMENSIONS EXTRA HEAVY VALVES.—FIGS. 173 A, 173 B, AND 173 C.

SIZE	2½	3	3½	4	4½	5	6	7	8	9	10	12
FACE TO FACE, SCREWED ENDS ... FIG. 173 A	10½	11½	12¾	13	14	14¾	16½	....	....	....	....	....
FACE TO FACE, FLANGED ENDS ... FIGS. 173 B, 173 C	11½	12½	13½	14	15	15¾	17½	19¼	21	23	24½	28
DIAMETER OF FLANGES ...	7½	8¼	9	10	10½	11	12½	14	15	16	17½	20
DIAMETER OF BOLT CIRCLE ...	5⅞	6⅝	7¼	7⅞	8½	9¼	10⅝	11⅞	13	14	15¼	17¾
NO. OF BOLTS ...	4	8	8	8	8	8	12	12	12	12	16	16
SIZE OF BOLTS ...	¾	⅝	⅝	¾	¾	¾	¾	⅞	⅞	⅞	⅞	⅞
SIZE OF BY-PASS ...	....	....	....	....	....	1	1	1½	1½	1½	1½	1½

STANDARD IRON-BODY VALVES. EXTRA HEAVY.

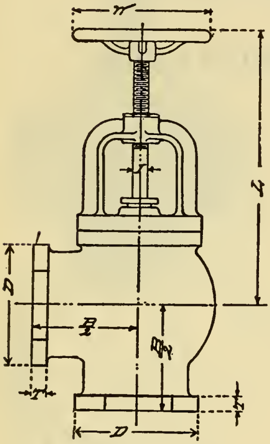


FIG. 173 D.
ANGLE VALVE. EXTRA HEAVY.

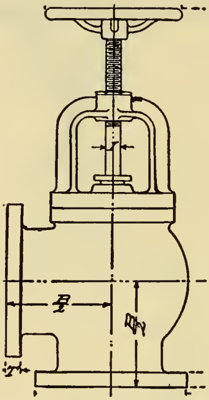


FIG. 173 E.
ANGLE VALVE. EXTRA HEAVY FLANGED.

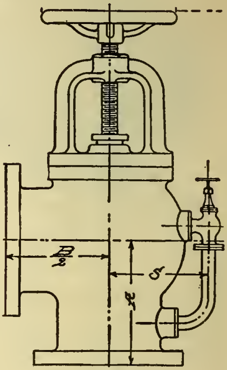


FIG. 173 F.
WITH BY-PASS.

STANDARD IRON-BODY VALVES. EXTRA HEAVY.—FIGS. 173 D, 173 E, AND 173 F.

SIZE	2½	3	3½	4	4½	5	6	7	8	9	10	12
FIG. 173 D. SCREWED ... EACH	29.00	32.00	33.50	35.00	55.00	55.00	79.00	100.00	111.00	....	190.00	285.00
FIG. 173 E. FLANGED ... EACH	31.00	35.00	37.00	39.00	59.00	59.00	84.00	105.00	117.00	....	200.00	300.00
FIG. 173 F. WITH BY-PASS	....	....	....	....	....	....	....	....	....	....	....	....

DIMENSIONS EXTRA HEAVY VALVES.—FIGS. 173 D, 173 E, AND 173 F.

SIZE	2½	3	3½	4	4½	5	6	7	8	9	10	12
CENTER TO INLET ... FIG. 173 D	5¼	5¾	6⅜	6½	7	7⅜	8¼	....	....	....	....	....
CENTER TO OUTLET ... FIG. 173 D	5¼	5¾	6⅜	6½	7	7⅜	8¼	....	....	....	....	....
CENTER TO INLET ... FIG. 173 E	5¾	6¼	6¾	7	7½	7⅞	8¾	9⅝	10½	11½	12¼	14
CENTER TO OUTLET ... FIG. 173 E	5¾	6¼	6¾	7	7½	7⅞	8¾	9⅝	10½	11½	12¼	14
DIAMETER OF FLANGES	7½	8¼	9	10	10½	11	12½	14	15	16	17½	20
BOLT CIRCLE	5⅞	6⅝	7¼	7⅞	8½	9¼	10⅝	11⅞	13	14	15¼	17¾
NUMBER OF BOLTS	4	8	8	8	8	8	12	12	12	12	16	16
SIZE OF BOLTS	¾	⅝	⅝	¾	¾	¾	¾	⅞	⅞	⅞	⅞	⅞
SIZE OF BY-PASS	....	....	....	....	....	1	1	1½	1½	1½	1½	1½

STANDARD IRON-BODY VALVES.

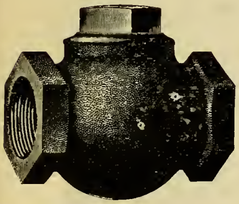


FIG. 174. HORIZONTAL CHECK VALVE.
SCREWED ENDS.

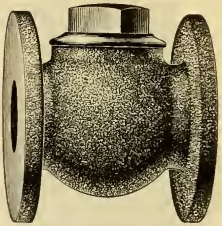


FIG. 176. HORIZONTAL CHECK VALVE.
FLANGED ENDS.

IRON-BODY CHECK VALVES.—FIG. 174.

SCREWED ENDS

SIZE	2	2½	3	3½	4	4½	5	6	7	8	10	12
EACH	3.60	6.50	8.90	12.25	14.25	19.00	22.00	30.00	45.00	57.00	105.00	155.00
FACE TO FACE	5⅞	6⅞	8	8¼	9¼	10	11⅜	13¼	14	16⅝	23	....

IRON-BODY CHECK VALVES.—FIG. 176.

FLANGED ENDS.

SIZE	2	2½	3	3½	4	4½	5	6	7	8	10	12
EACH	5.25	8.25	11.50	15.50	18.00	22.50	26.00	35.00	50.00	62.00	115.00	175.00

DIMENSIONS OF HORIZONTAL FLANGED CHECK VALVES.—FIG. 176.

SIZE	2	2½	3	3½	4	4½	5	6	7	8	10	12
FACE TO FACE	6¼	7⅛	8	8⅜	9⅝	10	12	12⅞	14	16½	23	27½
DIAMETER OF FLANGES	6	7	7½	8½	9	9¼	10	11	12½	13½	16	19
DIAMETER OF BOLT CIRCLE	4⅜	5½	6	7	7½	7¾	8½	9½	10¾	11¾	14¼	17
NO. OF BOLTS	4	4	4	4	8	8	8	8	8	8	12	12
SIZE OF BOLTS	½	½	½	½	⅝	⅝	⅝	⅝	⅝	⅝	¾	¾

NOTE. Iron-Body Check Valves, 3 inch and smaller, have brass caps; 3½ inch and larger, iron caps.

STANDARD IRON-BODY VALVES.

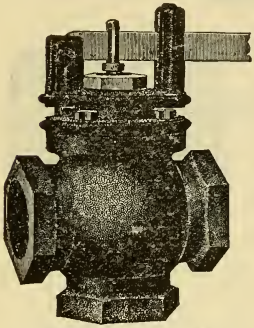


FIG. 179. GLOBE SAFETY VALVE.

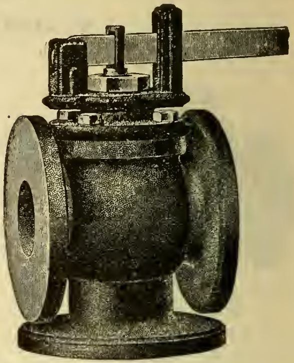


FIG. 180. GLOBE SAFETY VALVE, FLANGED ENDS.

IRON-BODY GLOBE SAFETY VALVES.—FIG. 179.
SCREWED ENDS.

SIZE	1¼	1½	2	2½	3	3½	4	4½	5	6
EACH	5.00	5.80	7.80	13.25	17.25	23.00	28.75	34.50	41.50	57.75
FACE TO FACE	....	....	5½	7	7¾	8½	9½	10	11	12¾
CENTRE TO INLET	....	....	2¾	3½	3⅞	4¼	4¾	5	5½	6⅜

IRON-BODY GLOBE SAFETY VALVES.—FIG. 180.
FLANGED ENDS.

SIZE	2	2½	3	3½	4	4½	5	6
DIAMETER OF FLANGES	6	7	7½	8½	9	9¼	10	11
CENTRE TO INLET	4¼	4½	5	5¼	6	6	6½	7
FACE TO FACE	7½	8	8	8½	10	10	11	13
EACH	10.25	16.00	21.50	27.50	34.00	40.00	48.00	65.00

IRON-BODY ANGLE SAFETY VALVES. NOT ILLUSTRATED.
SCREWED ENDS.

SIZE	1¼	1½	2	2½	3	3½	4	4½	5	6
EACH	5.00	5.80	7.80	13.25	17.25	23.00	28.75	34.50	41.50	57.75

IRON-BODY ANGLE SAFETY VALVES. NOT ILLUSTRATED.
FLANGED ENDS.

SIZE	2	2½	3	3½	4	4½	5	6
DIAMETER OF FLANGES	6	7	7½	8½	9	9¼	10	11
CENTRE TO INLET	4¼	4½	5	5¼	6	6	7	7
CENTRE TO OUTLET	3½	4	4	4¼	5	5	6	6½
EACH	10.25	16.00	21.50	27.50	34.00	40.00	48.00	65.00

Safety Valves with bottom opening, flanged and side opening screwed, same list as flanged.
For Flanged Valves with flanges of larger diameter, add 25 per cent. to list.

STANDARD IRON-BODY VALVES.

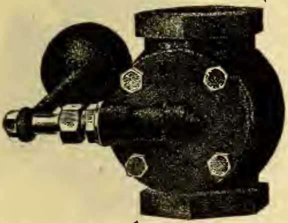


FIG. 181. BACK PRESSURE VALVE.

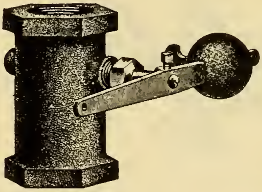


FIG. 181A. BACK PRESSURE WING PATTERN VALVE.

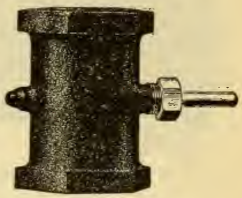


FIG. 182. BUTTERFLY VALVE.

IRON-BODY BACK PRESSURE VALVES.—FIGS. 181 AND 181A.

SCREWED ENDS.

SIZE	2	2½	3	3½	4	4½	5	6	7	8	10	12
FIG. 181 FIG. 181A	11.00	13.00	15.00	19.00	22.50	28.50	33.50	43.00	70.00	85.00	120.00	180.00

IRON-BODY BACK PRESSURE VALVES.—FIG. 181.

FLANGED ENDS.

SIZE	2½	3	3½	4	4½	5	6	7	8	10	12
DIAMETER OF FLANGES	7	7½	8½	9	9¼	10	11	12½	13½	16	19
FACE TO FACE	7⅛	8	8⅝	9⅝	10	12	12⅞	14	16½	23	27½
EACH	15.00	17.50	22.00	26.00	32.00	37.00	47.00	75.00	90.00	130.00	200.00

IRON-BODY BUTTERFLY VALVES.—FIG. 182.

SCREWED ENDS.

SIZE	1¼	1½	2	2½	3	3½	4	5	6
EACH	6.35	7.00	8.00	9.50	12.00	16.00	18.50	28.50	42.50

IRON-BODY BUTTERFLY VALVES.

FLANGED ENDS.

SIZE	2½	3	3½	4	5	6
DIAMETER OF FLANGES	7	7½	8½	9	10	11
FACE TO FACE	7	7½	8	8½	9¾	10½
EACH	11.50	15.00	19.00	22.00	32.00	47.00

STANDARD IRON COCKS.

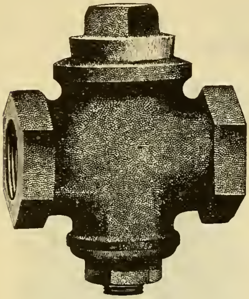


FIG. 183. IRON COCK.

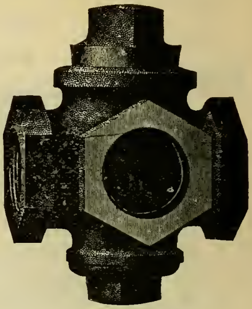


FIG. 184. THREE-WAY COCK.

IRON COCKS. — SCREWED ENDS. — FIG. 183.

SIZE	½	¾	1	1¼	1½	2	2½	3	3½	4	5	6
STANDARD PATTERN, EACH	.90	1.05	1.30	1.60	1.95	2.70	4.40	6.75	12.00	15.50	32.00	45.00
HEAVY PATTERN EACH	1.15	1.25	1.75	2.10	2.80	3.65	6.50	9.00	16.75	22.50	45.00	62.00
STANDARD PATTERN WITH BRASS PLUG	1.30	1.60	1.90	2.65	3.75	5.25	8.75	13.00	27.50	36.50	67.00	94.00
HEAVY PATTERN WITH BRASS PLUG	1.70	2.25	2.80	3.85	5.60	7.00	13.25	19.00	42.00	56.00	98.00	133.00

IRON COCKS. — FLANGED ENDS.

SIZE	1	1¼	1½	2	2½	3	3½	4	5	6
STANDARD PATTERN, EACH	2.25	2.75	3.25	4.25	6.25	9.50	15.00	19.00	36.00	50.00
HEAVY PATTERN EACH	3.15	3.85	4.90	6.10	9.10	13.30	21.70	28.00		
STANDARD PATTERN WITH BRASS PLUG	3.00	3.75	5.00	7.00	10.50	15.75	30.00	40.00	70.00	100.00
HEAVY PATTERN WITH BRASS PLUG	4.20	5.60	7.70	9.45	16.10	23.10	46.90	61.60		

DIMENSIONS. — IRON COCKS, FLANGED ENDS.

SIZE	1	1¼	1½	2	2½	3	3½	4
DIAMETER FLANGES	3⅜	4⅛	5	6	7	7½	8½	9
FACE TO FACE STANDARD PATTERN	3¼	4	4⅜	5	6¼	7¾	8¼	9¾
FACE TO FACE HEAVY PATTERN	4	4½	5½	6½	7½	8½	10	11

THREE-WAY COCKS. — SCREWED ENDS. — FIG. 184.

SIZE	¾	1	1¼	1½	2	2½	3	3½	4	5	6
ALL IRON EACH	1.65	1.80	2.05	2.65	3.65	5.35	7.50	14.00	19.00	36.50	52.00
WITH BRASS PLUG EACH	2.20	2.40	3.10	4.50	6.25	9.75	13.75	30.00	40.00	71.50	100.00

EXTRA FOR BRASS WASHERS ON ALL ABOVE.

SIZE	½	¾	1	1¼	1½	2	2½	3	3½	4	5	6
EACH	.10	.15	.25	.35	.40	.50	.75	1.00	2.00	3.50	6.00	8.00

IRON-BODY EXPANSION JOINTS.

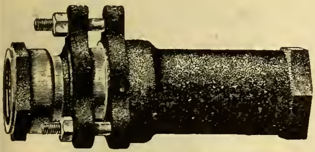


FIG. 185. IRON-BODY EXPANSION JOINT.

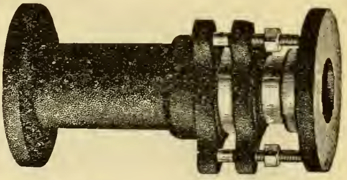


FIG. 186. IRON-BODY EXPANSION JOINT, FLANGED.

IRON-BODY EXPANSION JOINTS, STANDARD WEIGHT.—FIGS. 185 AND 186.

SIZE	2½	3	3½	4	4½	5	6	7	8	10	12
FIG. 185. SCREWED	13.00	17.50	25.00	30.00		45.00	55.00	70.00	100.00	160.00	225.00
FIG. 186. FLANGED	20.00	25.00	35.00	40.00		55.00	65.00	80.00	110.00	175.00	250.00

DIMENSIONS STANDARD WEIGHT EXPANSION JOINTS.—FIGS. 185 AND 186.

SIZE	2½	3	3½	4	5	6	7	8	10	12
FACE TO FACE EXTENDED	17	19½	21¼	23	24½	25½	26½	30½	30	34¾
LENGTH TRAVERSE	5½	5½	6	6	6	6	6½	7	8	8
DIAMETER FLANGE	7	7½	8½	9	10	11	12½	13½	16	19
DIAMETER BOLT CIRCLE	5½	6	7	7½	8½	9½	10¾	11¾	14¼	17
NO. BOLTS	4	4	4	8	8	8	8	8	12	12
SIZE BOLTS	½	½	½	½	⅝	⅝	⅝	⅝	¾	¾

EXTRA HEAVY EXPANSION JOINTS.

We do not advise the use of Expansion or Slip Joints especially for high-pressure piping except where absolutely unavoidable. The case is exceptional where expansion and contraction cannot be provided for by using bent pipes. Slip joints are always a source of annoyance; if packed tight enough to prevent leaking, there is a liability of getting them so tight that the joint will not act quickly enough to prevent breaking connections somewhere in the line.

Prices for extra heavy slip joints will be quoted when pressure and length of traverse required is given.

IRON-BODY FOOT VALVES.

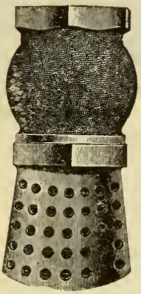


FIG. 187. IRON-BODY FOOT VALVE. 1 IN. TO 3 IN.

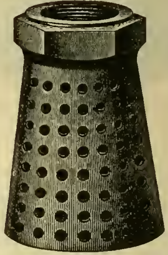


FIG. 187 A. STRAINER.

IRON-BODY FOOT VALVES AND STRAINERS.—FIGS. 187 AND 187 A.

SIZE	1	1¼	1½	2	2½	3	3½	4	5	6	8
FIG. 187 EACH	1.30	1.40	1.90	2.40	3.30	3.90	5.60	7.30	....	....	....
FIG. 187 A PLAIN	.25	.33	.44	.55	.82	1.10	1.75	2.00	2.50	3.50	7.50
FIG. 187 A GALVANIZED	.34	.43	.58	.80	1.20	1.70	2.60	3.00	3.90	5.00	11.00

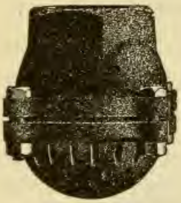


FIG. 187 D. IRON-BODY FOOT VALVE.

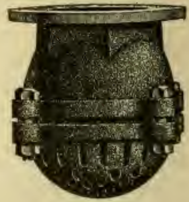


FIG. 187 E. IRON-BODY FOOT VALVE.

IRON-BODY FOOT VALVES.—FIGS. 187 D AND 187 E.

SIZE	1	1¼	1½	2	2½	3	3½	4	5	6	8	10	12
FIG. 187 D, EACH	.44	.52	.68	.90	1.30	1.85	2.60	2.80	4.25	7.00	16.00	29.00	58.00
FIG. 187 E, EACH	....	....	....	....	....	2.50	3.25	3.60	5.00	8.00	17.00	30.00	60.00
FIG. 187 D, GALVANIZED	.60	.75	1.00	1.45	2.00	2.70	3.00	4.25	6.50	10.00	30.00	50.00	90.00
FIG. 187 E, GALVANIZED	....	....	....	....	....	3.50	4.50	5.50	7.50	12.00	32.00	52.00	95.00

IRON-BODY FOOT AND CHECK VALVES.

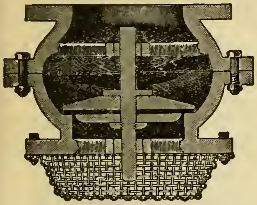


FIG. 191 A. FLANGED, 9" AND SMALLER.

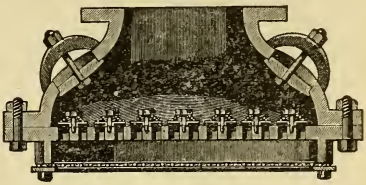


FIG. 192. 10" AND LARGER, FLANGED.

IRON-BODY FOOT VALVES.—FIGS. 191 A AND 192.

SIZE	2	2½	3	4	5	6	7	8	10	12	14	16	18	20	24
FIG. 191 A. SCREWED	11.50	12.00	16.25	20.00	26.25	33.00	38.50	44.75	...	...	...	...	...	...	...
FIG. 191 A. FLANGED	11.75	12.25	16.25	20.00	25.75	32.50	38.00	43.50	...	...	...	...	...	...	...
FIG. 192. FLANGED	...	...	...	...	...	...	...	...	82.00	112.00	145.00	190.00	235.00	265.00	400.00
DIAMETER OF FLANGES	6	7	7½	9	10	11	12½	13½	16	19	21	23½	25	27½	32

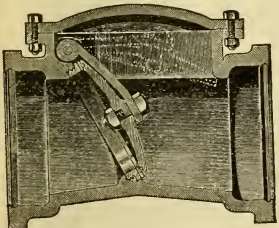


FIG. 195. SWING CHECK VALVES.
SCREWED, FLANGED, OR HUB ENDS.

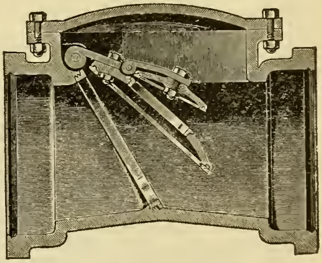


FIG. 196. SWING CHECK VALVES.
FLANGED OR HUB ENDS.

SWING CHECK VALVES.—FIGS. 195 AND 196.

SCREWED, FLANGED, OR HUB ENDS.

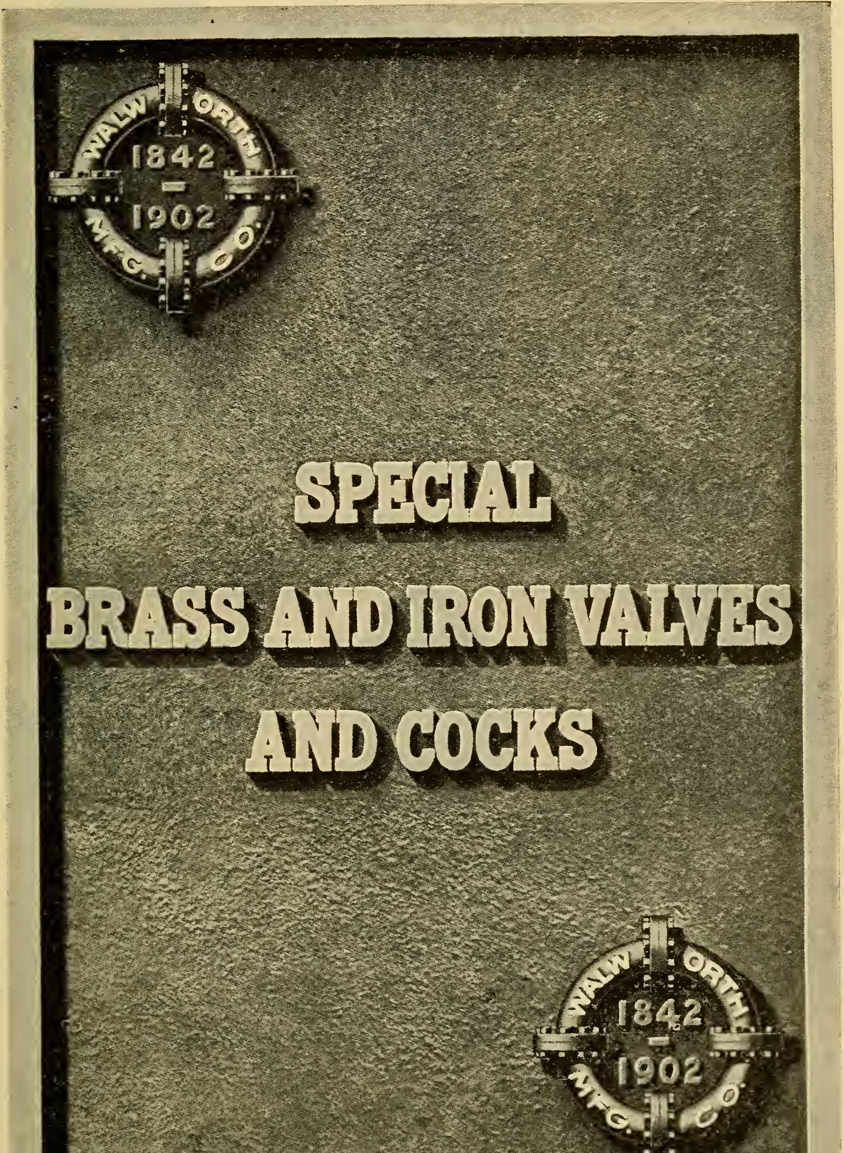
SIZE	2	2½	3	3½	4	4½	5	6	7	8	9	10	12	14	16	18	20	24
FIG. 195. SCREWED	7.00	7.75	9.75	14.50	20.50	23.00	25.50	31.00	41.50	44.50	62.50	77.50	97.00	...	...	...	...	...
FIG. 195. FLANGED ENDS	7.75	8.75	11.00	15.50	21.50	24.00	27.00	32.50	43.00	46.00	62.00	76.50	95.00	...	...	...	...	...
FIG. 195. HUB ENDS	...	...	10.25	...	20.50	...	25.00	28.50	...	43.00	61.00	73.00	92.00	...	...	...	...	...
FIG. 196. FLANGED ENDS	...	...	...	...	...	...	...	...	...	...	...	...	...	150.00	165.00	230.00	285.00	400.00
FIG. 196. HUB ENDS	...	...	...	...	...	...	...	...	...	...	...	...	...	146.00	160.00	225.00	280.00	390.00
DIAMETER OF FLANGES	6	7	7½	8½	9	9½	10	11	12½	13½	15	16	19	21	23½	25	27½	32

SPECIAL NOTICE.

After exhaustive tests we are now prepared to furnish seats of a mixture of pure nickel and gun iron for all our Gate and Globe Valves when required for superheated steam.

These seats are absolutely non-corrosive and will withstand the action of superheated steam.

WALWORTH MFG. CO.



WALWORTH 1842 – 1902 MFG. CO.

SPECIAL BRASS AND IRON VALVES AND COCKS

WALWORTH 1842 – 1902 MFG. CO.

SPECIAL BRASS VALVES.

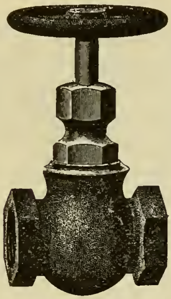


FIG. 197. FRINK SEAT GLOBE VALVE.

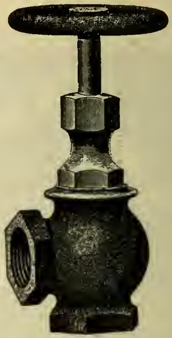


FIG. 198. FRINK SEAT ANGLE VALVE.

FRINK SEAT GLOBE AND ANGLE VALVES.—FIGS. 197 AND 198.

SIZE	¼	⅜	½	¾	1	1¼	1½	2	2½	3
EACH	80	1.00	1.25	1.75	2.50	3.35	4.60	7.00	14.00	20.00

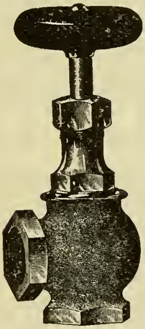


FIG. 199. FRINK SEAT RADIATOR VALVE, FEMALE.

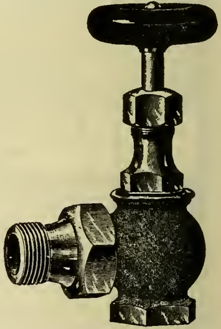


FIG. 200. FRINK SEAT RADIATOR VALVE, WITH UNION.

FRINK SEAT RADIATOR VALVES.—FIG. 199.

SIZE	½	¾	1	1¼	1½	2
ROUGH BODY EACH	1.75	2.15	2.80	3.75	4.90	7.50
FINISHED BODY EACH	2.50	2.90	3.70	4.85	6.30	9.65
ROUGH BODY, NICKEL PLATED EACH	2.05	2.50	3.20	4.20	5.40	8.25
FINISHED BODY, NICKEL PLATED EACH	2.80	3.25	4.10	5.30	6.80	10.40

FRINK SEAT RADIATOR VALVES.— FIG. 200.

SIZE	½	¾	1	1¼	1½	2
ROUGH BODY EACH	2.35	3.00	3.80	5.10	6.50	10.00
FINISHED BODY EACH	3.20	3.90	4.75	6.45	8.85	12.75
ROUGH BODY, NICKEL PLATED EACH	2.70	3.40	4.25	5.70	7.10	10.75
FINISHED BODY, NICKEL PLATED EACH	3.55	4.30	5.20	7.05	8.95	13.50

FOR PRICE OF EXTRA DISCS, SEE PAGE 151.

SPECIAL BRASS VALVES.

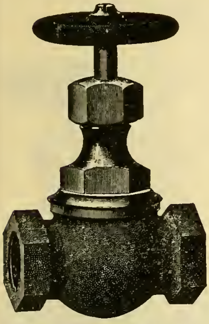


FIG. 201. GLOBE VALVE.

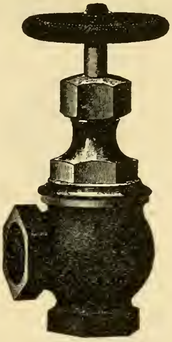


FIG. 202. ANGLE VALVE.

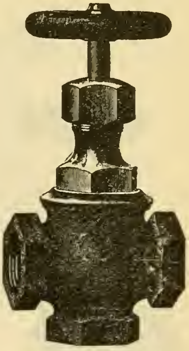


FIG. 203. CROSS VALVE.

WALWORTH JENKINS DISC VALVES.—FIGS. 201, 202, AND 203.

SIZE	¼	⅜	½	¾	1	1¼	1½	2	2½	3
FIGS. 201 AND 202, SCREWED ... EACH	1.10	1.25	1.60	2.20	2.80	4.00	5.50	8.75	15.75	22.00
FIGS. 201 AND 202, FLANGED ... EACH	....	....	....	....	6.00	9.00	11.00	16.50	25.00	34.00
FIG. 203, SCREWED ... EACH	1.70	2.00	2.25	2.50	3.25	4.75	6.25	9.50	20.00	27.50

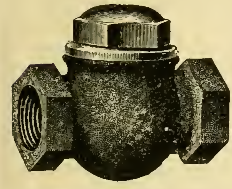


FIG. 204. HORIZONTAL CHECK VALVE.

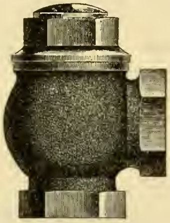


FIG. 205. ANGLE CHECK VALVE.

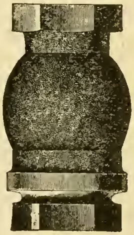


FIG. 206. VERTICAL CHECK VALVE.

JENKINS DISC CHECK VALVES.—FIGS. 204, 205 AND 206.

SIZE	¼	⅜	½	¾	1	1¼	1½	2	2½	3
FIGS. 204, 205 AND 206, SCREWED ... EACH	1.10	1.20	1.30	1.90	2.60	3.60	5.00	7.50	13.50	20.50
FIGS. 204 AND 205, FLANGED ... EACH		....	....		5.50	7.80	9.80	15.00	22.80	32.40

DIMENSIONS OF JENKINS DISC FLANGED VALVES.

SIZE	1	1¼	1½	2	2½	3
DIAMETER OF FLANGES	4	4½	5	6	7	7½
FACE TO FACE, FIGS. 201 AND 204, FLANGED	4	4⅜	4⅞	5$\frac{15}{16}$	6$\frac{11}{16}$	7½
Centre to Inlet or Outlet, FIGS. 202 and 205, Flanged	2⅝	2$\frac{15}{16}$	3$\frac{3}{16}$	3¾	4¼	4$\frac{9}{16}$

FOR PRICE OF EXTRA DISCS, SEE PAGE 151.

SPECIAL BRASS VALVES.

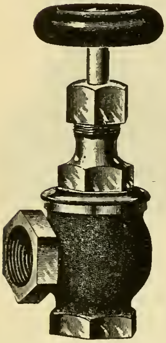


FIG. 207. RADIATOR VALVE, FEMALE.

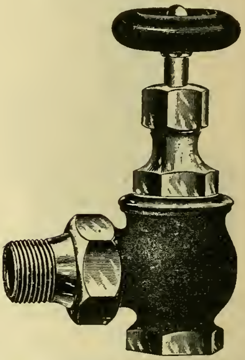


FIG. 208. RADIATOR VALVE WITH UNION.

JENKINS DISC RADIATOR VALVES.—FIG. 207.

SIZE	½	¾	1	1¼	1½	2
ROUGH BODY, EACH	2.00	2.50	3.20	4.50	6.25	10.50
FINISHED BODY, EACH	2.50	3.00	3.75	5.25	7.25	11.75
ROUGH BODY, NICKEL PLATED, EACH	2.40	2.90	3.60	4.90	6.65	10.90
FINISHED BODY, NICKEL PLATED, EACH	2.90	3.40	4.15	5.65	7.65	12.15

JENKINS DISC RADIATOR VALVES WITH UNION.—FIG. 208.

SIZE	½	¾	1	1¼	1½	2
ROUGH BODY, EACH	2.75	3.50	4.30	5.85	7 75	12.60
FINISHED BODY, EACH	3.20	4.00	4.80	6.40	8.75	13.85
ROUGH BODY, NICKEL PLATED, EACH	3.15	3.90	4.70	6.25	8.15	13.00
FINISHED BODY, NICKEL PLATED, EACH	3.60	4.40	5.20	6.80	9.15	14.35

FOR PRICE OF EXTRA DISCS, SEE PAGE 151.

SPECIAL CORNER VALVES.

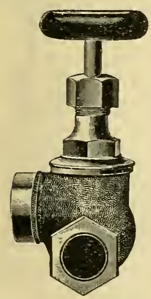


FIG. 209½. LEFT-HAND OFFSET CORNER VALVE.

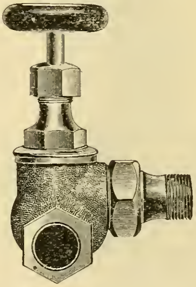


FIG. 210½. RIGHT-HAND CORNER VALVE, WITH UNION.

FRINK SEAT OFFSET CORNER VALVES.—FIG. 209½.

SIZE	½	¾	1	1¼	1½	2
ROUGH BODY .... EACH	2.25	2.75	3.50	5.00	7.00	11.55
FINISHED BODY .... EACH	2.75	3.25	4.25	5.75	8.00	12.95
ROUGH BODY, NICKEL PLATED .... EACH	2.75	3.15	4.00	5.50	7.50	12.10
FINISHED BODY, NICKEL PLATED ... EACH	3.15	3.50	4.50	6.00	8.25	13.50

FRINK SEAT OFFSET CORNER VALVES.—FIG. 210½.

SIZE	½	¾	1	1¼	1½	2
ROUGH BODY .... EACH	3.05	3.85	4.75	6.45	8.55	13.85
FINISHED BODY .... EACH	3.50	4.40	5.30	7.05	9.65	15.25
ROUGH BODY, NICKEL PLATED .... EACH	3.50	4.20	5.25	7.05	8.95	14.45
FINISHED BODY, NICKEL PLATED ... EACH	3.55	4.70	5.80	7.70	10.20	15.80

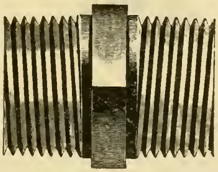


FIG. 210¾. BRASS RADIATOR NIPPLE.

BRASS RADIATOR NIPPLES.—FIG. 210¾.

SIZE	½	¾	1	1¼	1½	2
EACH	.30	.30	.45	.75	1.00	1.25

SPECIAL BRASS VALVES.

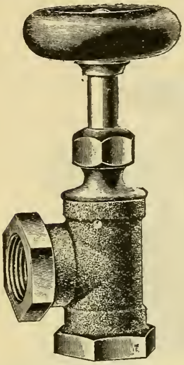


FIG. 210 A. HOT WATER RADIATOR VALVE WITHOUT UNION.

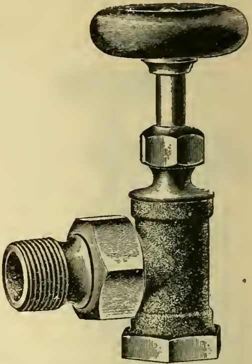


FIG. 210 B. HOT WATER RADIATOR VALVE WITH UNION.

HOT WATER RADIATOR VALVES.—FIG. 210 A.
WITHOUT UNION.

SIZE	¾	1	1¼	1½	2
ROUGH BODY, NICKEL PLATED.......EACH	1.95	2.65	3.70	5.00	7.75

HOT WATER RADIATOR VALVES.—FIG. 210 B.
WITH UNION.

SIZE	¾	1	1¼	1½	2
ROUGH BODY, NICKEL PLATED.......EACH	2.85	3.65	5.05	7.10	10.85

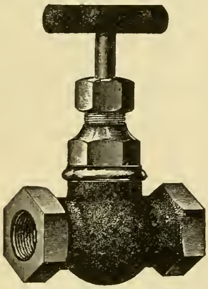


FIG. 210 C. HYDRAULIC GLOBE VALVE.

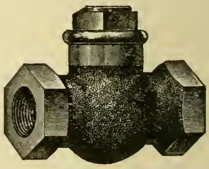


FIG. 210 D. HYDRAULIC CHECK VALVE.

HYDRAULIC BRASS GLOBE VALVES.—FIG. 210 C.
FOR 2500 LBS. PRESSURE.

SIZE	¼	⅜	½	¾	1	1¼	1½	2
EACH	2.35	2.60	2.80	3.60	4.60	6.50	8.10	14.50

HYDRAULIC BRASS CHECK VALVES.—FIG. 210 D.

SIZE	¼	⅜	½	¾	1	1¼	1½	2
EACH	2.25	2.45	2.60	3.25	4.20	6.00	7.50	13.75

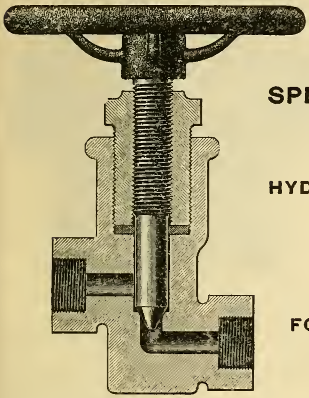


FIG. 210 E HYDRAULIC GLOBE VALVE

SPECIAL BRASS VALVES.

HYDRAULIC BRASS GLOBE AND CHECK VALVES.

FIGS. 210 E AND 210 F.

FOR 5,000 LBS. PRESSURE.

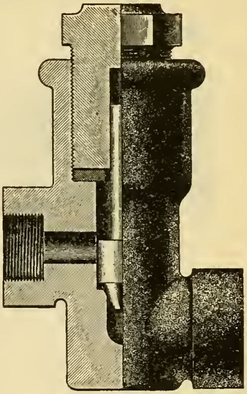


FIG. 210 F. HYDRAULIC CHECK VALVE.

SIZE	½	¾	1	1¼	1½	2
FIG. 210 E	17.50	23.50	32.25	48.00	68.50	....
FIG. 210 F	17.50	23.50	32.25	48.00	68.50	....

SPECIAL IRON-BODY VALVES.

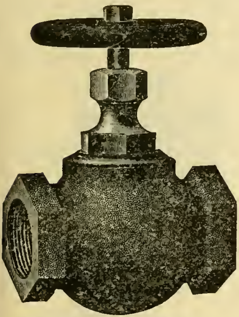


FIG. 213. PLAIN TOP.

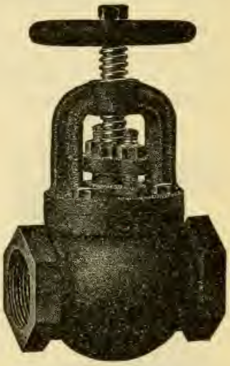


FIG. 214. YOKE TOP.

JENKINS DISC IRON-BODY GLOBE AND ANGLE VALVES.—FIGS. 213 AND 214.

SIZE	2	2½	3	3½	4	4½	5	6	7	8	10	12
PLAIN TOP, SCREWED	7.25	11.00	16.00		....	....	....	....	....	....		....
YOKE TOP, SCREWED	10.00	12.00	16.75	19.50	24.00	36.00	40.00	48.00	80.00	90.00	130.00	185.00
PLAIN TOP, FLANGED	8.50	13.00	18.00	....	....	....	....	....	....	....	....	....
YOKE TOP, FLANGED	11.75	14.00	18.50	21.50	26.00	39.00	42.00	50.00	80.00	90.00	130.00	185.00

DIMENSIONS OF JENKINS DISC IRON-BODY FLANGED VALVES.

SIZE	2	2½	3	3½	4	4½	5	6	7	8	10	12
DIAMETER FLANGES	6	7	7½	8½	9	9¼	10	11	12½	13½	16	19
FACE TO FACE GLOBE VALVES	6	7½	9¼	10	11¾	12½	13	16	16	18½	21¼	24½
CENTRE TO FACE ANGLE VALVES	3⅞	4½	4⅝	5⅜	5⅞	6¼	6½	8	8½	9¼	11	12¾

BACK PRESSURE AND EXHAUST RELIEF VALVES.

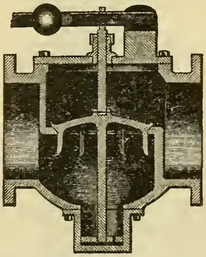


FIG. 214 H.
BACK PRESSURE OR EXHAUST RELIEF VALVE, HORIZONTAL PATTERN.

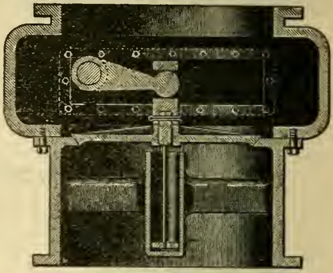


FIG. 214 J.
BACK PRESSURE OR EXHAUST RELIEF VALVE, VERTICAL PATTERN.

BACK PRESSURE OR EXHAUST RELIEF VALVES. HORIZONTAL PATTERN.—FIG. 214 H.

NOTE.—FIG. 214 H. SHOWS A BACK PRESSURE VALVE. WHEN USED AS AN AUTOMATIC RELIEF VALVE THE LEVER AND WEIGHT ARE REMOVED.

SIZE	2	2½	3	3½	4	4½	5	6	7	8	9	10	12	14
FACE TO FACE SCREWED ENDS	7⅛	7⅛	8¾	9⅛	10¾	...	...	...	...	...	...	...	...	...
FACE TO FACE FLANGED ENDS	...	...	...	...	...	11½	12¼	13¾	15	15⅛	19⅛	19⅛	22	21¼
EACH	20.00	24.00	30.00	35.00	40.00	45.00	55.00	75.00	100.00	130.00	200.00	200.00	275.00	345.00

BACK PRESSURE OR EXHAUST RELIEF VALVES. VERTICAL PATTERN.—FIG. 214 J.

SIZE	4	5	6	7	8	9	10	12	14	16	18	20
FACE TO FACE	10	11½	12½	13½	15	17	17	19	21	23	25	27
EACH	40.00	55.00	75.00	100.00	130.00	200.00	200.00	275.00	345.00	465.00	600.00	750.00

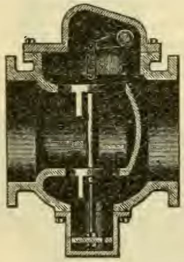


FIG. 214 K.
SEMI-BALANCED BACK PRESSURE VALVE. VERTICAL OR HORIZONTAL.

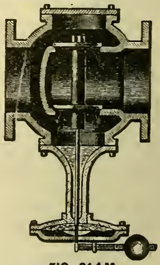


FIG. 214 M.
EUREKA LOW PRESSURE REGULATING VALVE.

SEMI-BALANCED BACK PRESSURE VALVES. VERTICAL OR HORIZONTAL.—FIG. 214 K.

NOTE.—THIS VALVE IS VERY SENSITIVE AND WORKS ON ANY PRESSURE FROM ATMOSPHERE TO 30 LBS.

SIZE	2	2½	3	3½	4	4½	5	6	7	8	9	10	12	14
EACH	20.00	24.00	30.00	35.00	40.00	45.00	55.00	75.00	100.00	130.00	200.00	200.00	275.00	345.00

Sizes 2 to 4 inch, screwed ends only.

EUREKA LOW PRESSURE REGULATING VALVES.—FIG. 214 M.

FOR REDUCING PRESSURE FROM 125 LBS. TO ANY PRESSURE ON THE REDUCED SIDE LESS THAN 15 LBS.

SIZE	¾	1	1¼	1½	2	2½	3	3½	4	5	6	7	8	10	12
FACE TO FACE	4½	4½	4¾	4¾	6	7½	8½	9½	10⅜	11¾	12¾	13¼	14½	16½	18½
EACH	20.00	22.00	28.00	35.00	44.00	57.00	72.00	85.00	100.00	135.00	180.00	225.00	275.00	350.00	470.00

Sizes ¾ to 2 inch, inclusive, screwed ends; larger size flanged.

NOTE.—ALL ABOVE VALVES HAVE FLANGES AND DRILLING TO MASTER STEAM FITTERS' STANDARDS.

SPECIAL VALVES.

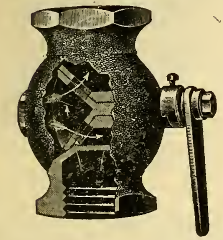


FIG. 214 R. FITTS' CHRONOMETER GOVERNOR VALVE.

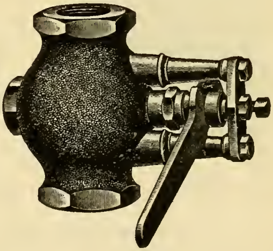


FIG. 214 S. WITH YOKE.

FITTS' CHRONOMETER GOVERNOR VALVES.—FIGS. 214R AND 214S.

SIZE	⅜	½	¾	1	1¼	1½	2	2½	3	4	6
FIG. 214 R. IRON BODY .... EACH	....	....	5.50	8.00	11.00	15.00	20.00	25.00	35.00	60.00	120.00
FIG. 214 R. BRONZE BODY ...... EACH	....	....	7.00	10.00	14.00	20.00	28.00	37.00	55.00	....	....
FIG. 214 S. IRON BODY .... EACH	....	....	....	....	15.00	20.00	25.00	33.00	45.00	75.00	150.00
FIG. 214 S. BRONZE BODY .... EACH	9.00	9.00	10.00	13.00	18.00	25.00	33.00	45.00	65.00	....	....

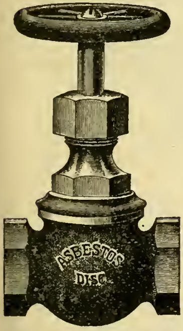


FIG. 217. GLOBE VALVE.

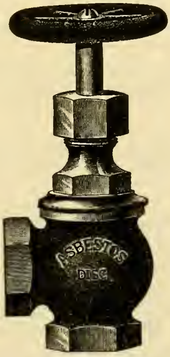


FIG. 218. ANGLE VALVE.

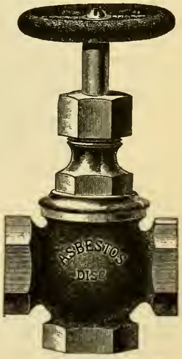


FIG. 219. CROSS VALVE.

ASBESTOS DISC BRASS VALVES.—FIGS. 217, 218 AND 219.

SIZE	¼	⅜	½	¾	1	1¼	1½	2	2½	3
FIGS. 217 AND 218 .... EACH	1.10	1.25	1.60	2.20	2.80	4.00	5.50	8.75	15.75	22.00
FIG. 219 .... EACH	....	....	2.25	2.50	3.25	4.75	6.25	9.50	20.00	30.00
Extra Discs and Holders, Complete .... EACH	.14	.07	.09	.10	.12	.18	.25	.36	.48	.60

SPECIAL VALVES.

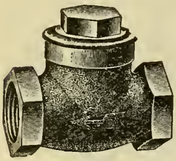


FIG. 220 A.
WALWORTH SWING CHECK VALVES, BRASS.

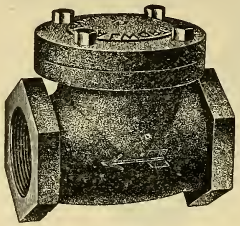
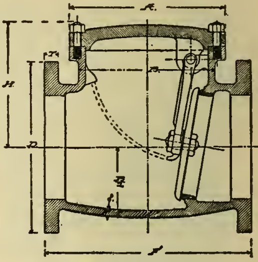


FIG. 221 A
WALWORTH SWING CHECK VALVES, IRON BODY.



SECTIONAL CUT.

WALWORTH SWING CHECK VALVES, BRASS.—FIG. 220 A.

SIZE	⅜	½	¾	1	1¼	1½	2	2½	3	4
FIG. 220 A. SCREWED	1.25	1.30	1.75	2.25	3.25	4.25	6.25	12.00	20.00	....
FIG. 220 A. FLANGED	....	....	....	6.25	8.75	11 25	20.00	33.00	43.00	62.00
FACE TO FACE, SCREWED	2⅛	2½	3⅛	3 11/32	3¾	4 5/16	5	7 9/16	8	....
FACE TO FACE, FLANGED	....	....	....	3⅜	4	4 11/16	6	7 9/16	8⅛	...
DIAMETER OF FLANGES	....	....	4	4½	5	6	7	7½	8½	9
DIAMETER OF BOLT CIRCLE	....	....	2¾	3¼	3⅝	4⅜	5½	6	7	7½
NO. OF BOLTS	....	....	4	4	4	4	4	4	4	8
SIZE OF BOLTS	....	....	7/16	7/16	½	½	½	½	½	½

WALWORTH SWING CHECK VALVES, BRASS. EXTRA HEAVY.—FIG. 220 A.

SIZE	⅜	½	¾	1	1¼	1½	2	2½
FIG. 220 A. EXTRA HEAVY, SCREWED	2.00	2.50	3.00	4.00	5.75	7.50	10.00	22.00
FIG. 220 A. EXTRA HEAVY, FLANGED	....	....	....	12.00	17 00	22.00	30.00	66.00
FACE TO FACE, SCREWED	....	....	3 9/16	3⅝	4	4 13/16	5⅜	7⅝
FACE TO FACE, FLANGED	....	....	....	....	4 5/16	5	5 11/16	7⅞
*DIAMETER FLANGES	....	....	....	....	4½	6	6	7

* These diameters are the diameters of Standard Weight Iron Flanges. Customers should in every case specify the bolt circle and number of bolts.

WALWORTH SWING CHECK VALVES, IRON BODY.—FIG. 221 A.

SIZE	2½	3	3½	4	5	6	7	8	10	12
STANDARD WEIGHT, SCREWED	10.25	12.00	15.00	17.50	21.50	29.50	35.00	39.00	....	....
STANDARD WEIGHT, FLANGED	10.75	13.00	16.00	18 50	22.75	30 75	36.25	45.25	59.00	130.00
STANDARD WEIGHT, HUB ENDS	....	....	....	....	....	....	....	....	....	....
EXTRA HEAVY, SCREWED	16.00	19.00	26.50	29.00	43.00	56.00	70.00	85.00	132.00	....
EXTRA HEAVY, FLANGED	19.50	22.50	30.00	32.50	46.00	59.00	73.00	93.00	140.00	....
FACE TO FACE, STANDARD WEIGHT, SCREWED	7¼	7⅞	8 13/16	9¾	11	12¾	14	15¼	18⅝	....
FACE TO FACE, STANDARD WEIGHT, FLANGED	8	8½	10	11	12	13½	15	16½	19½	22½
FACE TO FACE, HUB ENDS	....	....	....	....	....	....	....	....	....	....
FACE TO FACE, EXTRA HEAVY, SCREWED	7½	8⅝	....	10⅝	12⅛	13⅜	14⅞	16	....	....
FACE TO FACE, EXTRA HEAVY, FLANGED	9	10⅛	....	10½	14¼	15¾	17¼	18	....	....
DIAMETER FLANGES, STANDARD WEIGHT	7	7½	8½	9	10	11	12½	13½	16	19
DIAMETER FLANGES, EXTRA HEAVY	7½	8¼	9	10	11	12½	14	15	17½	....
DIAMETER OF BOLT CIRCLE, STANDARD WEIGHT	5½	6	7	7½	8½	9½	10¾	11¾	14¼	17
NUMBER OF BOLTS	4	4	4	8	8	8	8	8	12	12
SIZE OF BOLTS	½	½	½	½	⅝	⅝	⅝	⅝	¾	¾
DIAMETER OF BOLT CIRCLE, EXTRA HEAVY	5⅞	6⅝	7¼	7⅞	9¼	10⅝	11⅞	13	15¼	....
NUMBER OF BOLTS	4	8	8	8	8	12	12	12	16	....
SIZE OF BOLTS	½	⅝	⅝	¾	¾	¾	⅞	⅞	⅞	....

SPECIAL IRON COCKS.

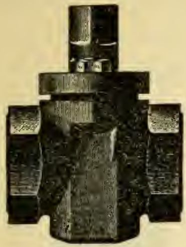


FIG. 229. ASBESTOS PACKED COCK.

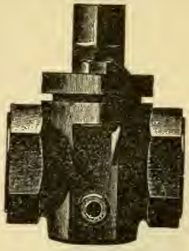


FIG. 230. ASBESTOS PACKED COCK, WITH STOP AND WASTE.

ASBESTOS PACKED IRON COCKS.—FIGS. 229 AND 230.

SIZE	½	¾	1	1¼	1½	2	2½	3	3½	4	5	6
SCREWED ENDS, EACH	1.60	2.10	2.50	3.50	4.75	7 00	12.00	18.00	27 00	30.00	45.00	60.00
FLANGED ENDS, EACH			2.50	3.50	4.75	7.00	12.00	18.00	27.00	30.00	45.00	60.00

ASBESTOS PACKED BRASS COCKS.

SIZE	¼	⅜	½	¾	1	1¼	1½	2	2½	3
SCREWED ENDS............EACH	3.35	3.35	3.35	4.20	5.60	8.00	10.35	16.00	26.50	37.50

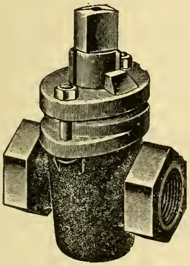


FIG. 231. ASBESTOS PACKED COCK, HEAVY.

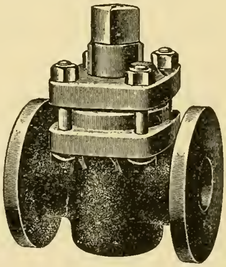


FIG. 232½. EXTRA HEAVY.

ASBESTOS PACKED IRON COCKS.—FIG. 231.

HEAVY.

SIZE	½	¾	1	1¼	1½	2	2½	3	3½	4
WITH SCREWED ENDS	2.00	2.50	3.00	4.25	5.75	8.50	14.50	21.50	32.50	36.00
WITH FLANGED ENDS	....	....	3.00	4.25	5.75	8.50	14.50	21.50	32.50	36.00

ASBESTOS PACKED COCKS.—FIG. 232½.

EXTRA HEAVY.

SIZE	½	¾	1	1¼	1½	2	2½	3	3½	4	5
FIG. 232½. SCREWED ENDS	2.40	3.00	3.50	5.00	6.75	10.00	17 00	26.00	38.00	42.00	....
FIG. 232½. FLANGED ENDS	....	....	3.50	5.00	6.75	10.00	17.00	26.00	38.00	42.00	....

SPECIAL VALVES.

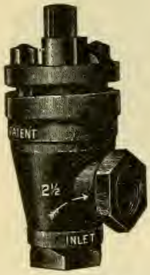
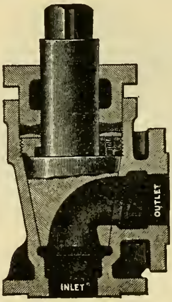
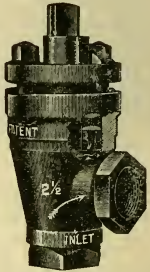


FIG. 232 A. NEVER-STICK BLOW-OFF COCK, ANGLE PATTERN.



SECTIONAL.



SECTIONAL.

NEVER-STICK BLOW-OFF COCKS.—FIG. 232 A.

(KJERNER PATENT.)

ANGLE OR STRAIGHT PATTERN—EXTRA HEAVY.

WORKING PRESSURE, 250 LBS.

SIZE ....INCHES	1¼	1½	2	2½	3
CENTER TO FACE FLANGED ENDS....INCHES	3½	3⅞	4⅜	6	6
CENTER TO FACE SCREWED ENDS...INCHES	2½	2¾	3⅞	6	....
DIAMETER OF FLANGES ....INCHES	5	6	6½	7½	9.
DIAMETER OF BOLT CIRCLE...........INCHES	3¾	4½	5	5⅞	6⅝
SIZE OF BOLTS ....INCHES	½	⅝	⅝	¾	⅝
NUMBER OF BOLTS	4	4	4	4	8
PRICE, FLANGED ENDS....................EACH	14.00	16.00	28.00	32.00	54.00
PRICE, SCREWED ENDS ....EACH	14.00	16.00	28.00	32.00	54.00

The particular features of this valve can be briefly summed up as follows:

The head of the plug has a firm bearing against the locking ring. The plug is adjustable and the valve need not leak. It has a large taper and cannot wedge or bind.

The pressure on the plug does not destroy the packing.

The working parts are protected and safe from severe wear.

The port is *inside* the plug and cannot be injured by cutting with scale.

The valve is thoroughly made, for high or low pressure, and is always tight and ready for use, or after long service can be made so with little trouble.

It is now in use in several important steam plants, East and West, and is fully proving that the broad claims made for it are well grounded.

This valve is also made in *straight pattern* for *other purposes*, where high-grade quick-opening serviceable valves or cocks are desired, extra heavy or standard weight; flanged or screwed.

REVERSE CURRENT AUTOMATIC STOP VALVES.

EXTRA HEAVY.

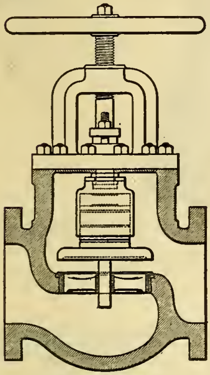


FIG. 232 C. REVERSE CURRENT AUTOMATIC GLOBE STOP VALVE.

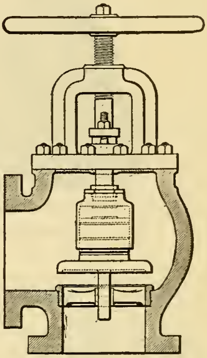


FIG. 232 D. REVERSE CURRENT AUTOMATIC ANGLE STOP VALVE.

EXTRA HEAVY REVERSE CURRENT AUTOMATIC STOP VALVES.

FIGS. 232 C AND 232 D.

SIZE	2½	3	4	5	6	7	8	10
FIG. 232 C, EACH	35.00	40.00	50.00	65.00	80.00	100.00	120.00	200.00
FIG. 232 D, EACH	35.00	40.00	50.00	65.00	80.00	100.00	120.00	200.00

DIMENSIONS.—FIGS. 232 C AND 232 D.

SIZE	2½	3	3½	4	5	6	7	8	10
DIAMETER FLANGES	7½	8¼	9	10	11	12½	14	15	17½
DIAMETER BOLT CIRCLE	5⅞	6⅝	7¼	7⅞	9¼	10⅝	11⅞	13	15¼
NO. OF BOLTS	4	8	8	8	8	12	12	12	16
SIZE OF BOLTS	¾	⅝	⅝	¾	¾	¾	⅞	⅞	⅞
FACE TO FACE FIG. 232 C	10½	12	13	14	16	18	19	20	24½
CENTER TO INLET FIG. 232 D	5¼	6	6½	7	8	9	9½	10	12¼
CENTER TO OUTLET FIG. 232 D	5¼	6	6½	7	8	9	9½	10	12¼

WALWORTH COMPOSITION GATE VALVES.

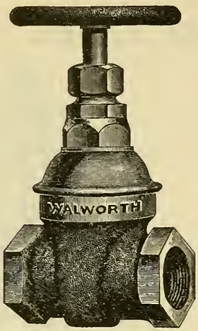


FIG. 236. WALWORTH COMPOSITION GATE VALVE.

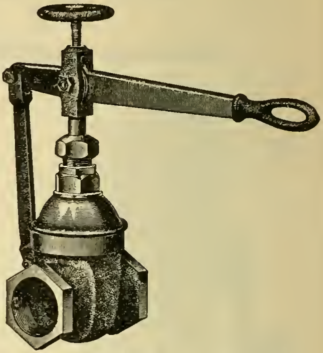


FIG. 236A. WITH SLIDING STEM.

WALWORTH COMPOSITION GATE VALVES.—FIGS. 236 AND 236A.

SIZE	⅜	½	¾	1	1¼	1½	2	2½	3	3½	4
SCREWED ENDS–FIG. 236	1.20	1.30	1.75	2.25	3.25	4.25	6.25	11.50	16.00	30.00	38.00
FLANGED ENDS–FIG. 236	. .	.	3.75	5.00	6.50	8.25	12.00	19.50	26.50	39.00	46.00
SLIDING STEM, EXTRA	.75	1.00	1.20	1.40	1.60	1.80	2.00	2.25	2.50	2.75	3.00

For Dimensions see next page.

WALWORTH COMPOSITION GATE VALVES. EXTRA HEAVY.

SIZE	½	¾	1	1¼	1½	2	2½
SCREWED ENDS	2.55	3.30	4.40	5.80	8.10	11.40	16.75
FLANGED ENDS	. . . .	. . . .	8.00	10.00	15.00	19.75	28.00

For Dimensions see next page.

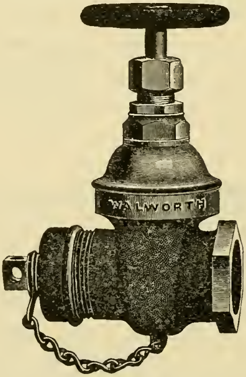


FIG. 237 WALWORTH HOSE VALVE.

WALWORTH HOSE GATE VALVES, BRONZE SEAT, IRON WHEEL.—FIG. 237.

SIZE	¾	1	1¼	1½	2	2½	3
WITH CAP AND CHAIN	2.80	3.80	4.75	6.40	9.00	13.30	19.00
WITHOUT CAP AND CHAIN	2.00	2.75	3.50	5.00	7.25	11.50	16.50

DIMENSIONS WALWORTH COMPOSITION GATE VALVES.—FIG. 236.

STANDARD WEIGHT.

SIZE	⅜	½	¾	1	1¼	1½	2	2½	3	3½	4
FIG. 236. SCREWED. FACE TO FACE	2 3/16	2⅝	3⅛	3½	3 15/16	4⅜	5⅛	5 7/16	6 11/16	8⅜	9
FIG. 236. FLANGED. FACE TO FACE	....	....	3	3 9/16	3 15/16	4 5/16	5¼	5¾	7	8¼	8⅞
*DIAMETER FLANGES	....	....	3½	4	4½	5	6	7	7½	8½	9

DIMENSIONS WALWORTH COMPOSITION GATE VALVES.—FIG. 236.

EXTRA HEAVY.

SIZE	½	¾	1	1¼	1½	2	2½
SCREWED ENDS. FACE TO FACE	2¾	3 3/16	3 9/16	4 3/16	4 9/16	5 7/16	5⅝
FLANGED ENDS. FACE TO FACE	....	....	4¾	5⅜	5⅞	6¾	7¾
*DIAMETER FLANGES	....	....	4	4½	5	6	7

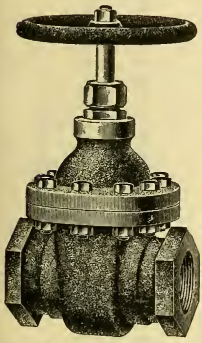


FIG. 237 A. EXTRA HEAVY GATE VALVE. BOLTED BONNET.

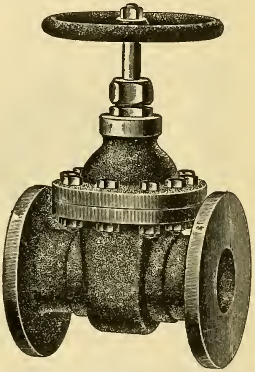


FIG. 237 B. EXTRA HEAVY GATE VALVE. BOLTED BONNET

WALWORTH COMPOSITION GATE VALVES.—FIGS. 237 A AND 237 B.

EXTRA HEAVY. BOLTED BONNET.

SIZE	2	2½	3	3½	4
FIG. 237 A ... EACH					
FIG. 237 B ... EACH					

DIMENSIONS WALWORTH COMPOSITION GATE VALVES.—FIGS. 237 A AND 237 B.

EXTRA HEAVY. BOLTED BONNET.

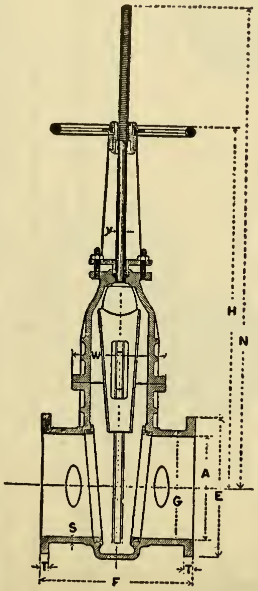
SIZE	2	2½	3	3½	4
FACE TO FACE. FIG. 237 A					
FACE TO FACE. FIG. 237 B	8½	9	9½	10	10½
*DIAMETER FLANGES	6	7	7½	8½	9

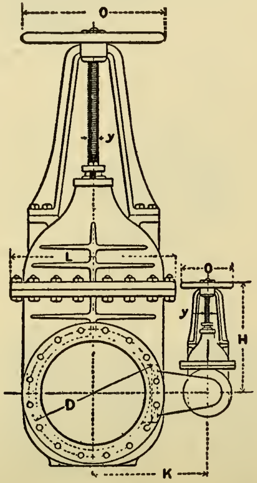
* These diameters are the diameters of Standard Weight Iron Flanges. Customers should in every case specify the bolt circle and number of bolts.

Table 110.

Walworth Standard Weight Gate Valves.

Table 110.





Bronze Seat Valves for 100 lbs. Working Steam Pressure.

Babbitt Seat Valves for 60 lbs. Working Steam Pressure.

Babbitt Seat Valves for 200 lbs. Water Pressure.

With Renewable Bronze Seats, or Babbitt Seats with Outside Screw and Yoke.

Rising Spindles of Bronze or Steel. **Can be Repacked under Pressure.**

Bronze Spindles will be furnished unless otherwise specified.

(See Table of Dimensions on next page.)

For Prices, see page 150.

Table 110.—Continued. Table 110.—Continued.

Walworth Standard Weight Gate Valves.

Renewable Bronze Seats or Babbitt Seats.

Outside Screw and Yoke. **Rising Spindle.**

Can be Repacked under Pressure.

Bronze Seat Valves for 100 lbs. Working Steam Pressure. **Babbitt Seat Valves for 60 lbs. Working Steam Pressure.**

Babbitt Seat Valves for 200 lbs. Water Pressure. **Bronze or Steel Spindles.**

Bronze Spindles furnished unless otherwise specified.

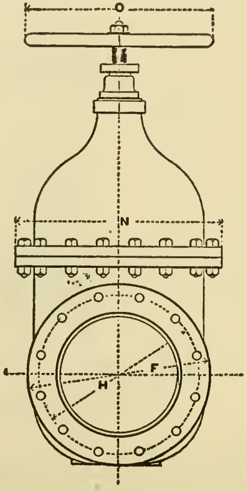
DIMENSIONS. (See cuts on opposite page.)

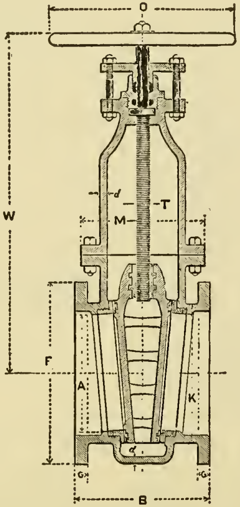
Size of Port . . . . inches	A	2½	3	3½	4	4½	5	6	7	8	9	10	12	13	14	15	16	18	20	22	24
For Wrought Iron Pipe . . . . . . ,,		2½	3	3½	4	4½	5	6	7	8	9	10	12	14 O.D.	15 O.D.	16 O.D.	17 O.D	18 O.D.	20 O.D. 21 O.D.	22 O.D.	24 O.D.
For Cast Iron Pipe . . . . ,,		2½	3	3½	4	4½	5	6	7	8	9	10	12	13	14	15	16	18	20	22	24
Face to Face Flanged Valves with By-Pass . . ,,	F																26½	26¾	27	32	32⅞
Face to Face Flanged Valves without By-Pass . ,,		7⅞	8¼	8⅞	9⅝	10¼	9⅝	10⅞	11½	11⅞	12⅞	13⅝	14⅝	15⅞	15⅞	16⅝	18¾	20	21	22½	24
Face to Face Screw End Valves . . . . . . ,,		6⅞	8	8¾	9¾	10¼	10⅝	11⅞	12¾	12⅞	13⅛	15⅛									
Diameter of End Flanges . . . . ,,	E	7	7½	8½	9	9¼	10	11	12½	13½	15	16	19	20	21	22¼	23½	25	27½	29½	31½
Thickness of End Flanges . . . . ,,	T	11/16	¾	13/16	15/16	15/16	15/16	1	1 1/16	1⅛	1⅛	1 3/16	1¼	1⅜	1⅜	1⅜	1 7/16	1 9/16	1 11/16	1 13/16	1⅞
Diameter of Bolt Circle . . . . ,,	D	5½	6	7	7½	7¾	8½	9½	10¾	11¾	13¼	14¼	17	18	18¾	20	21¼	22¾	25	27¼	29½
Number of Bolts		4	4	4	8	8	8	8	8	8	12	12	12	12	12	16	16	16	20	20	20
Size of Bolts . . . . inches		½	½	½	½	⅝	⅝	⅝	⅝	⅝	⅝	¾	¾	⅞	⅞	⅞	⅞	1	1	1	1
Outside Diameter of Body . . . . ,,	G	3¾	4½	5	5⅝	6	6½	7¾	9⅛	9¾	10⅞	12	14⅛	16⅜	16⅜	16¾	18 9/16	19¾	22	24⅛	26¼
Thickness of Shell . . . . ,,	S	5/16	⅜	7/16	7/16	½	½	½	9/16	⅝	⅝	11/16	¾	13/16	13/16	⅞	15/16	1	1	1 1/16	1⅛
Width of Cap Flange . . . . ,,	W	5 5/16	5¾	6¼	6⅝	7¾	7⅞	9	10	10	10¾	11	11¾	14½	14½	15	15⅝	16½	17	18	18½
Length of Cap Flange . . . . ,,	L	6 13/16	7⅝	8½	9¼	11	11½	13½	14⅜	16	17½	19⅛	21½	24¼	24¼	26¼	28⅜	30⅜	32⅛	34¾	37¼
Center of Port to Top of Wheel . . . . . ,,	H		14 7/16		17⅛		23¾	27	30 7/16	33	36½	40⅛	48¼	55½	55½		59¼	63	68	76⅝	
Center of Port to Top of Spindle, Open . . . ,,	N		19⅛		22¾		30¾	35	40⅛	42⅞	48	52¾	64¼	70½	70½		78¾	83¾	91	102	
Diameter of Hand Wheel . . . . ,,	O	6½	8	10	10	11	11	12	13	14	14	14	15	18	18	22	22	24	24	30	30
Diameter of Spindle . . . . ,,	Y	¾	¾	1	1	1⅛	1⅛	1¼	1¼	1⅜	1⅜	1⅜	1½	1⅝	1⅝	1⅝	1¾	1¾	1⅞	2⅛	2⅛
Size of By-Pass Valve . . . . ,,																	4	4	4	5	5
Center of Valve to Center of By-Pass . . . . ,,	K																21	22	23	24	26

For Prices, see page 150.

Table 111. **Table 111.**

Walworth Standard Weight Gate Valves.





With Renewable Bronze Seats or Babbitt Seats. Inside Screw. Stationary Spindles of Bronze or Steel.

Bronze Spindles furnished unless otherwise specified.

Bronze Seat Valves for 100 lbs. Working Steam Pressure. **Babbitt Seat Valves for 60 lbs. Working Steam Pressure.**

Babbitt Seat Valves for 200 lbs. Water Pressure.

(See Table of Dimensions on next page.)

For Prices, see page 150.

Table 111.—Continued.

Table 111.—Continued.

Walworth Standard Weight Gate Valves.

With Renewable Bronze Seats or Babbitt Seats.

Inside Screw. Stationary Spindles of Bronze or Steel.

Bronze Seat Valves for 100 lbs. Working Steam Pressure.

Babbitt Seat Valves for 60 lbs. Working Steam Pressure.

Babbitt Seat Valves for 200 lbs. Water Pressure.

Bronze Spindles furnished unless otherwise specified.

DIMENSIONS.

(See cuts on opposite page.)

Size of Port . . . inches	A	1½	2	2½	3	3½	4	4½	5	6	7	8	9	10	12	13	14	15	16	18	20	22	24
For Wrought Iron Pipe . . . ,,		1½	2	2½	3	3½	4	4½	5	6	7	8	9	10	12	14 O.D.	15 O.D.	16 O.D.	17 O.D.	18 O.D.	20 O.D. 21 O.D.	22 O.D.	24 O.D.
For Cast Iron Pipe . . . ,,			2	2½	3	3½	4	4½	5	6	7	8	9	10	12	13	14	15	16	18	20	22	24
Face to Face, Flange End Valves . . ,,	B	5¼	5⅝	7⅞	8¼	8⅞	9⅜	10¼	9⅝	10⅞	11½	11⅞	12⅞	13⅝	14⅝	15⅞	15⅞	16⅝	18¾	20	21	22½	24
Face to Face, Screw End Valves . . ,,		4¾	5 5/16	6⅞	8	8¾	9¾	10¼	10⅜	11⅞	12¾	12⅞	13⅛	15⅛									
Diameter of End Flanges . . . ,,	F	5	6	7	7½	8½	9	9¼	10	11	12½	13½	15	16	19	20	21	22¼	23½	25	27½	29½	31½
Thickness of End Flanges . . . ,,	G	9/16	⅝	11/16	¾	13/16	15/16	15/16	15/16	1	1 1/16	1⅛	1⅛	1 3/16	1¼	1⅜	1⅜	1⅜	1 7/16	1 9/16	1 11/16	1 13/16	1⅞
Diameter of Bolt Circle . . . ,,	H	3¾	4¾	5½	6	7	7½	7¾	8½	9½	10¾	11¾	13¼	14¼	17	18	18¾	20	21¼	22¾	25	27¼	29¼
Number of Bolts . . .		4	4	4	4	4	8	8	8	8	8	8	12	12	12	12	12	16	16	16	20	20	20
Size of Bolts . . . inches		½	½	½	½	½	½	⅝	⅝	⅝	⅝	⅝	⅝	¾	¾	⅞	⅞	⅞	⅞	1	1	1	1
Outside Diameter Barrel of Body . ,,	K	2 7/16	3	3¾	4½	5	5⅝	6	6½	7¾	9⅛	9¾	10⅞	12	14⅛	16⅜	16⅜	16¾	18 9/16	19¾	22	24⅛	26¼
Thickness of Shell . . . ,,	d	¼	5/16	5/16	⅜	7/16	7/16	½	½	½	9/16	⅝	⅝	11/16	¾	13/16	13/16	⅞	15/16	1	1	1 1/16	1⅛
Width of Cap Flange . . . ,,	M	Round Caps.		5 5/16	5¾	6¼	6⅝	7¾	7⅞	9	9½	10	10¾	11	11¾	14½	14½	15	15⅜	16½	17	18	18½
Length of Cap Flange . . . ,,	N	3¼	4	6 13/16	7⅝	8½	9¼	11	11½	13½	15⅛	16	17½	19⅛	21½	24¼	24¼	26¼	28⅜	30⅜	32⅛	34¾	37¼
Diameter of Hand Wheel . . . ,,	O	4	4⅜	5¾	6¾	7½	8¼	10	10	12	13	14	14	15	16	20	20	22	22	24	24	30	30
Size of Spindle . . . ,,	T	⅝	⅝	¾	⅞	⅞	1	1⅛	1⅛	1¼	1¼	1⅜	1⅜	1½	1½	1⅝	1⅝	1⅝	1¾	1¾	1⅞	2⅛	2⅛
Height of Valve from Center of Port ,,	W	7⅛	8⅜	11	12	12¾	14	16	18¾	21	23⅜	26	28	29⅝	34½	41⅝	41⅝	43¼	44⅞	47¼	50⅛	52⅜	57¼

For Prices, see page 150.

WALWORTH STANDARD WEIGHT GATE VALVES.

PRICE LIST.

STANDARD WEIGHT GATE VALVES.—TABLE 110.

OUTSIDE SCREW AND YOKE. **BABBITT SEATS.** **SCREWED AND FLANGED.**

SIZE	2½	3	3½	4	4½	5	6	7	8	9	10	12	13	14	15	16	18	20	22	24
SCREWED ENDS	16.50	18.50	25.00	27.25	46.00	46.00	58.00	77.00	92.00											
FLANGED ENDS	16.50	18.50	25.00	27.25	46.00	46.00	58.00	77.00	92.00	115.00	127.00	175.00								

STANDARD WEIGHT GATE VALVES.—TABLE 110.

OUTSIDE SCREW AND YOKE. **BRONZE SEATS.** **SCREWED AND FLANGED.**

SIZE	2½	3	3½	4	4½	5	6	7	8	9	10	12	13	14	15	16	18	20	22	24
SCREWED ENDS	19.25	21.50	27.00	31.00	50.00	50.00	62.50	84.00	100.00											
FLANGED ENDS	19.25	21.50	27.00	31.00	50.00	50.00	62.50	84.00	100.00	121.00	140.00	190.00								

STANDARD WEIGHT GATE VALVES.—TABLE 111.

INSIDE SCREW. **BABBITT SEATS.**

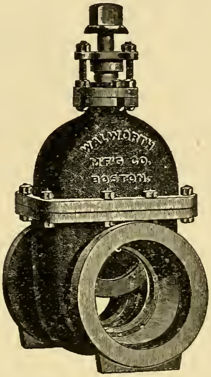
SIZE	1½	2	2½	3	3½	4	4½	5	6	7	8	9	10	12
SCREWED ENDS .... EACH	4.50	5.50	9.25	11.25	15.00	17.00	24.50	24.50	32.50	45.00	55.00			
SLIDING STEM AND LEVER EXTRA	2.00	2.00	2.25	2.50	2.75	3.00								
FLANGED ENDS			9.25	11.25	15.00	17.00	24.50	24.50	32.50	45.00	55.00	74.00	82.00	114.00
SLIDING STEM AND LEVER EXTRA			2.25	2.50	2.75	3.00								

STANDARD WEIGHT GATE VALVES.—TABLE 111.

INSIDE SCREW. **BRONZE SEATS.**

SIZE	1½	2	2½	3	3½	4	4½	5	6	7	8	9	10	12
SCREWED ENDS .... EACH	7.25	9.25	11.50	13.75	17.25	20.25	28.25	28.25	36.00	50.00	60.00			
FLANGED ENDS			11.50	13.75	17.25	20.25	28.25	28.25	36.00	50.00	60.00	79.00	92.50	127.00

WALWORTH IRON-BODY GATE VALVES.



237C. WALWORTH GATE VALVE, HUB ENDS.

WALWORTH IRON-BODY GATE VALVES. HUB ENDS.—FIG. 237C.

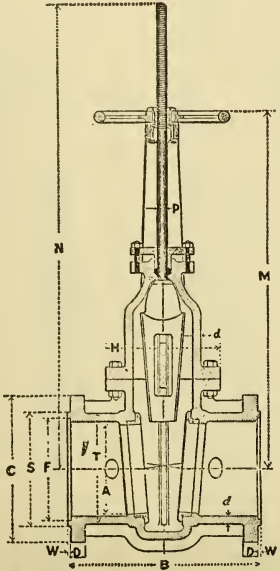
SIZE .... INCHES	2	3	4	5	6	7	8	10	12	14	15	16	18	20	22	24
END TO END OF PIPE WHEN LAID IN HUB.. . .. . "	3¼	3¾	5½	5¾	6	6	6¾	7½	8	10	10	10	11	11½	11½	12
INSIDE DIAMETER OF HUB...... "	3⅛	4⅝	5¾	6⅞	7⅞	8⅞	10	12	14⅝	16¼	17½	18½	20⅝	22¾	24¾	26¾
WEIGHT........... .... LBS.	32	55	116	135	195	245	290	439	600	843	950	1080	1475	1700	2225	2750
BABBITT SEAT....................EACH	10.00	11.50	19.50	25.00	30.00	45.00	48.25	77.00	101.00	. . .	. . .	. . .	. . .	. .	. . .	. . .
BRONZE SEAT.................... "		16.50	25.25		38.25		62.00	100.00	130.00		. . .	.	. . .	. . .	. . .	. . .

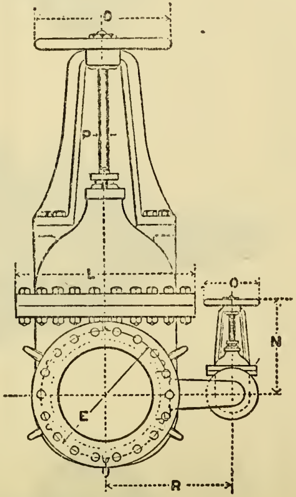
JENKINS OR FRINK DISCS.

SIZE..................	¼	⅜	½	¾	1	1¼	1½	2	2½	3	3½	4	5	6	7	8	10	12
EACH..................	.03	.04	.04	.05	.06	09	12	.18	.24	.33	.45	.52	.68	.90	.98	1.20	1.75	2.25

Table 112. Table 112.

Walworth Extra Heavy Bronze Seat Gate Valves.





Walworth Extra Heavy Gate Valves, Working Steam Pressure, 250 lbs.

With Renewable Bronze Seats. **Outside Screw and Yoke.** **Rising Spindles of Bronze or Steel.**

Can be Repacked under Pressure.

(See Table of Dimensions on next page.) **Bronze Spindles furnished unless otherwise specified.**

For Prices, see page 156.

Walworth Extra Heavy Bronze Seat Gate Valves.

With Renewable Bronze Seats.

Outside Screw and Yoke. Can be Repacked Under Pressure. Rising Spindles of Bronze or Steel.

Bronze Spindles unless otherwise specified.

DIMENSIONS.

See cuts on opposite page.

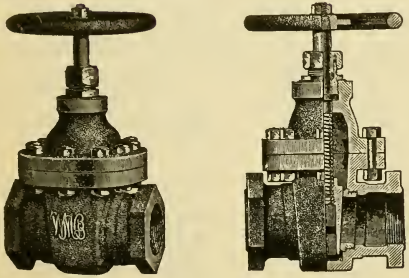
Working Steam Pressure, 250 lbs.

Size of Port . . . inches	A	1 1/4	1 1/2	2	2 1/2	3	3 1/2	4	4 1/2	5	6	7	8	9	10	12	13	14	15	16	18	20 21	22	24
For Wrought Iron Pipe „		1 1/4	1 1/2	2	2 1/2	3	3 1/2	4	4 1/2	5	6	7	8	9	10	12	14 O.D.	15 O.D.	16 O.D.	17 O.D.	18 O.D.	20 O.D.	22 O.D.	24 O.D.
For Cast Iron Pipe „				2	2 1/2	3	3 1/2	4	4 1/2	5	6	7	8	9	10	12	13	14	15	16	18	20	22	24
Face to Face Flange Valves with By-Pass „	B										19	20	20 5/8	21 7/8	22 3/4	23 3/4	25 7/8	25 7/8	26 1/8	32 7/8	33 1/4	35 1/4	35 1/2	35 7/8
Face to Face Flange Valves without By-Pass „		5 7/8	6 1/4	7 1/2	9 1/2	11 1/8	11 7/8	12	13 1/4	15	15 7/8	16 1/4	16 1/2	17	18	19 3/4	21 1/2	21 1/2	21 1/2	21 1/2				
Face to Face Screw End Valves „		6 1/2	6 11/16	7	8 1/8	9 1/2	11 3/8	12 3/8	14	15 3/8	16 1/4													
Diameter of End Flanges „	C	5	6	6 1/2	7 1/2	8 1/4	9	10	10 1/2	11	12 1/2	14	15	16	17 1/2	20	21 1/2	22 1/2	23 1/2	25	27	29 1/2	31 1/2	34
Thickness of End Flanges „	D	5/8	11/16	11/16	1	1 1/8	1 3/16	1 1/4	1 5/16	1 3/8	1 7/16	1 1/2	1 5/8	1 3/4	1 7/8	2	2 1/8	2 1/8	2 3/16	2 1/4	2 3/8	2 1/2	2 5/8	2 3/4
Diameter of Bolt Circle „	E	3 3/4	4 1/2	5	5 7/8	6 5/8	7 1/4	7 7/8	8 1/2	9 1/4	10 5/8	11 7/8	13	14	15 1/4	17 3/4	19	20	21	22 1/2	24 1/2	26 3/4	28 3/4	31 1/4
Size of Bolts „		1/2	5/8	5/8	3/4	5/8	5/8	3/4	3/4	3/4	3/4	7/8	7/8	7/8	7/8	7/8	7/8	7/8	1	1	1	1 1/8	1 1/8	1 1/8
Number of Bolts		4	4	4	4	8	8	8	8	8	12	12	12	12	16	16	20	20	20	20	24	24	28	28
Outside Diameter of Body inches	T	2 3/8	2 5/8	3 1/4	3 3/4	4 5/8	5 1/4	5 13/16	6 9/16	7 3/8	8 3/8	9 1/2	10 1/4	11 1/4	12 5/8	15	17 3/16	17 3/16	18 3/8	19 1/2	20 7/8	23	24 1/4	26 3/8
Thickness of Shell „	d	11/32	3/8	7/16	9/16	5/8	21/32	23/32	3/4	3/4	13/16	13/16	27/32	7/8	15/16	1 1/8	1 7/32	1 7/32	1 5/16	1 3/8	1 7/16	1 1/2	1 5/8	1 11/16
Center of Port to Top of Wheel „	M	7 1/2	9 1/8	11 5/16	12 3/4	16 3/4	18 3/8	20	22 1/2	24 5/8	27 1/4	31 7/16	35 1/2	37 3/4	43	49 3/8	55 5/8	55 5/8	59 1/2	63 7/16	66 1/2	71 1/2		
Center of Port to Top of Spindle, Open „	N	9 3/4	11 1/2	14 1/8	16 1/4	21 3/4	23 1/4	24 3/4	28 1/2	32 1/4	35 1/2	40 1/2	45 1/2	49 1/2	55 1/2	63 5/8	72 3/8	72 3/8	76 1/2	80 1/2	88	95 1/4		
Diameter of Hand Wheel „	O	5	5 3/4	6 1/2	8	10	10	11	11	12	13	14	14	15	15	18	22	22	22	24	24	24	30	30
Size of Spindle „	P	5/8	5/8	3/4	3/4	1	1	1 1/8	1 1/8	1 1/4	1 1/4	1 3/8	1 1/2	1 1/2	1 1/2	1 5/8	1 5/8	1 5/8	1 3/4	1 3/4	1 7/8	2 1/8	2 1/8	2 1/4
Size of By-Pass Valve „											1 1/4	1 1/2	1 1/2	1 1/2	1 1/2	2	2	2	2	3	3	4	4	4
Center of Valve to Center of By-Pass „	R										10 1/2	12	12 3/8	13 5/16	14	16 1/2	17 3/4	17 3/4	18 1/4	22 1/4	23	24	25 1/4	27
		PLAIN BODIES.										RIBBED BODIES.												

For Prices, see page 156.

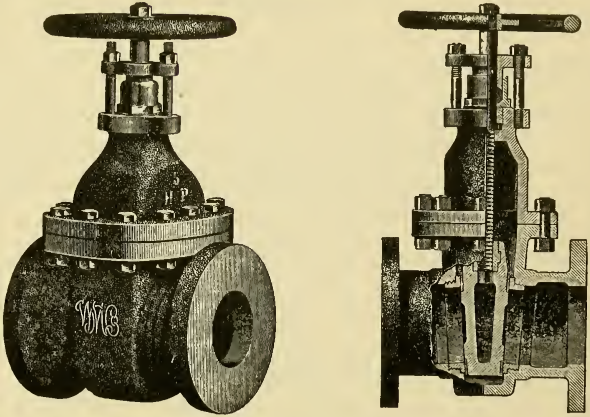
Table 113. Table 113.

Walworth Extra Heavy Bronze Seat Gate Valves.



Sectional View.

Walworth Extra Heavy Bronze Seat Gate Valves.
Inside Screw-Nut Stuffing Box, 2½″ to 4″
Screwed or Flanged.



Walworth Extra Heavy Bronze Seat Gate Valves.
Gland Stuffing Box.
Screwed, 4½″ to 6″. Flanged, 4½″ to 12″.

Walworth Extra Heavy Gate Valves. Working Steam Pressure, 200 lbs.

With Renewable Bronze Seats. Inside Screw. Stationary Spindles of Bronze or Steel.

Bronze Spindles will be furnished unless otherwise specified.

(See Table of Dimensions on next page.)

The attention of engineers is called to the manner in which the seats of all our high pressure valves are inserted.

The bronze seats, or rings, are faced straight, and screwed into position at an angle corresponding to the angle of the plug. The difficulties attendant upon the extreme nicety of adjustment of these rings, necessary in other valves, where the rings are screwed or pressed in straight, and faced off on an angle, are not met with in our method of construction.

Admitting the remote possibility of screwed rings moving slightly from their original position, under pressure from any cause, our construction insures continued tightness of the valve, since under such conditions the plug would simply come in closer contact throughout its entire surface with the rings. Under the same conditions, exactly the reverse of this would be true on valves where the seats are faced on an angle, and screwed or pressed into the valve straight, as a portion of the surface of the plug would be entirely removed from contact with the rings, while the other portion would bind firmly against them.

For Prices, see page 156.

Table 113.—Continued. Table 113.—Continued.

Walworth Extra Heavy Bronze Seat Gate Valves.

With Renewable Bronze Seats. Inside Screw. Stationary Spindles of Bronze or Steel.

Working Steam Pressure, 200 lbs. Bronze Spindles furnished unless otherwise specified.

DIMENSIONS.

Size of Port . . . inches	$2\frac{1}{2}$	3	$3\frac{1}{2}$	4	$4\frac{1}{2}$	5	6	7	8	9	10	12
Face to Face Flange Valves with By-Pass . . . ,,							19	20	$20\frac{5}{8}$	$21\frac{7}{8}$	$22\frac{3}{4}$	$23\frac{3}{4}$
Face to Face Flange Valves without By-Pass . . . ,,	$9\frac{1}{2}$	$11\frac{1}{8}$	$11\frac{7}{8}$	12	$13\frac{1}{4}$	15	$15\frac{7}{8}$	$16\frac{1}{4}$	$16\frac{1}{2}$	17	18	$19\frac{3}{4}$
Face to Face Screw End Valves . . . ,,	$8\frac{1}{8}$	$9\frac{1}{2}$	$11\frac{3}{8}$	$12\frac{3}{8}$	14	$15\frac{3}{8}$	$16\frac{1}{4}$					
Diameter of End Flanges . . . ,,	$7\frac{1}{2}$	$8\frac{1}{4}$	9	10	$10\frac{1}{2}$	11	$12\frac{1}{2}$	14	15	16	$17\frac{1}{2}$	20
Thickness of End Flanges . . . ,,	1	$1\frac{1}{8}$	$1\frac{3}{16}$	$1\frac{1}{4}$	$1\frac{5}{16}$	$1\frac{3}{8}$	$1\frac{7}{16}$	$1\frac{1}{2}$	$1\frac{5}{8}$	$1\frac{3}{4}$	$1\frac{7}{8}$	2
Diameter of Bolt Circle . . . ,,	$5\frac{7}{8}$	$6\frac{5}{8}$	$7\frac{1}{4}$	$7\frac{7}{8}$	$8\frac{1}{2}$	$9\frac{1}{4}$	$10\frac{5}{8}$	$11\frac{7}{8}$	13	14	$15\frac{1}{4}$	$17\frac{3}{4}$
Size of Bolts . . . ,,	$\frac{3}{4}$	$\frac{5}{8}$	$\frac{5}{8}$	$\frac{3}{4}$	$\frac{3}{4}$	$\frac{3}{4}$	$\frac{3}{4}$	$\frac{7}{8}$	$\frac{7}{8}$	$\frac{7}{8}$	$\frac{7}{8}$	$\frac{7}{8}$
Number of Bolts . . .	4	8	8	8	8	8	12	12	12	12	16	16
Thickness of Shell . . . inches	$\frac{9}{16}$	$\frac{5}{8}$	$\frac{21}{32}$	$\frac{23}{32}$	$\frac{3}{4}$	$\frac{3}{4}$	$\frac{11}{16}$	$\frac{13}{16}$	$\frac{27}{32}$	$\frac{7}{8}$	$\frac{15}{16}$	$1\frac{1}{8}$
Center of Port to Top of Wheel . . . ,,	$12\frac{1}{2}$	$13\frac{1}{2}$	14	$15\frac{1}{2}$	$16\frac{3}{4}$	21	$22\frac{3}{4}$	$24\frac{1}{2}$	27	$29\frac{1}{2}$	$31\frac{3}{4}$	36
Diameter of Hand Wheel . . . ,,	8	10	10	11	11	12	13	14	14	15	15	18
Size of Spindle . . . ,,	$\frac{3}{4}$	1	1	$1\frac{1}{8}$	$1\frac{1}{8}$	$1\frac{1}{4}$	$1\frac{1}{4}$	$1\frac{3}{8}$	$1\frac{1}{2}$	$1\frac{1}{2}$	$1\frac{1}{2}$	$1\frac{5}{8}$
Size of By-Pass Valve . . . ,,							$1\frac{1}{4}$	$1\frac{1}{2}$	$1\frac{1}{2}$	$1\frac{1}{2}$	$1\frac{1}{2}$	2
Center of Valve to Center of By-Pass . . . ,,							$10\frac{1}{2}$	12	$12\frac{3}{8}$	$13\frac{5}{16}$	14	$16\frac{1}{2}$

For Prices, see page 156.

WALWORTH EXTRA HEAVY BRONZE SEAT GATE VALVES.

WITH RENEWABLE BRONZE SEATS—OUTSIDE SCREW AND YOKE—RISING SPINDLES.

WORKING STEAM PRESSURE 250 LBS.

TABLE 112. PAGES 152 AND 153.

SIZE	1¼	1½	2	2½	3	3½	4	4½	5	6	7	8	9	10	12	13	14	15	16	18	20	24
WITHOUT BY-PASS, FLANGES FACED	7.85	9.15	11.50	14.25	20.50	21.75	27.75	37.25	37.25	48.00	63.00	76.25	91.00	108.50	143.00	....	....	....	....	....	....	....
WITH BY-PASS, FLANGES FACED	...	..	..	...	...	..	..	..	..	61.75	78.00	92.00	108.00	125.50	163.50	....	....	....	....	....	....	....

WALWORTH EXTRA HEAVY BRONZE SEAT GATE VALVES.

WITH RENEWABLE BRONZE SEATS—INSIDE SCREW—STATIONARY SPINDLES.

WORKING STEAM PRESSURE 200 LBS.

TABLE 113. PAGES 154 AND 155.

SIZE	2½	3	3½	4	4½	5	6	7	8	9	10	12
SCREWED OR FLANGED ENDS, NUT TOP	14.50	19.50	21.50	27.00	....	....	....	....	....	....	....	....
SCREWED ENDS, GLAND TOP	....	....	....	....	36.25	36.25	45.75	....	....	....	....	....
FLANGED ENDS, GLAND TOP	....	....	....	....	36.25	36.25	45.75	53.50	60.50	71.75	87.50	138.75
ADD FOR BY-PASS	....	....	....	....	....	....	17.00	17.00	19.00	20.75	20.75	....

WALWORTH BRASS GATE VALVES.

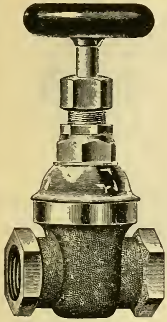


FIG. 239. WOOD-WHEEL GATE VALVE.

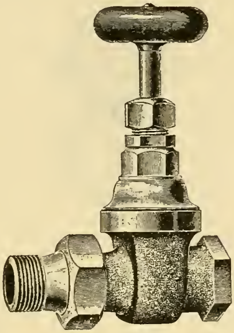


FIG. 239 A. WOOD-WHEEL GATE VALVE WITH UNION.

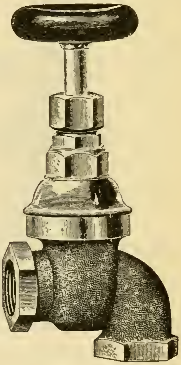


FIG. 240. ANGLE GATE VALVE.

WOOD-WHEEL GATE VALVES.—FIG. 239.

SIZE	½	¾	1	1¼	1½	2
ROUGH	1.45	1.90	2.45	3.45	4.45	6.50
NICKEL PLATED	1.75	2.25	2.85	3.90	4.95	7.25
KEYS FOR LOCK SHIELD VALVES..EACH	.23	.23	.28	.30	.33	.50

Valves with Lock Shields, same list price.

WOOD-WHEEL GATE VALVES.—FIG. 239 A.
WITH UNIONS.

SIZE	½	¾	1	1¼	1½	2
ROUGH ....EACH	2.20	2.65	3.40	4.60	6.00	8.85
NICKEL PLATED......EACH	2.55	3.05	3.85	5.20	6.60	9.60
KEYS FOR LOCK SHIELD VALVES..EACH	.23	.23	.28	.30	.33	.50

Valves with Lock Shields, same list price.

WOOD-WHEEL ANGLE GATE VALVES.—FIG. 240.

SIZE	½	¾	1	1¼	1½	2
ROUGH ....EACH	2.15	2.65	3.50	4.40	5.20	8.20
NICKEL PLATED......EACH	2.50	3.05	3.95	4.85	5.80	8.80
KEYS FOR LOCK SHIELD VALVES..EACH	.23	.23	.28	.30	.33	.50

Valves with Lock Shields, same list price.

REDUCING VALVES.

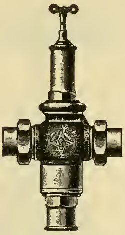


FIG. 240 A.
MASON REDUCING VALVE, SCREWED.

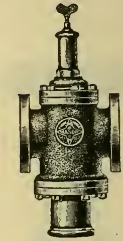


FIG. 240 D.
MASON REDUCING VALVE, FLANGED.

MASON REDUCING PRESSURE VALVES.—FIGS. 240 A AND 240 D.

SIZE	½	¾	1	1¼	1½	2	2½	3	3½	4	5	6	8	10
SCREWED EACH	18.00	18.00	22.00	28.00	35.00	44.00	57.00	72.00	--	--	--	--	--	--
FLANGED EACH	--	--	--	--	--	44.00	57.00	72.00	85.00	100.00	135.00	180.00	250.00	350.00
FACE TO FACE, SCREWED	5¾	5¾	7	8	9	11¼	8¾	10¼	--	--	--	--	--	--
FACE TO FACE, FLANGED	--	--	--	--	--	7	8¾	10¼	12	14	15⅛	17⅛	21	25¾

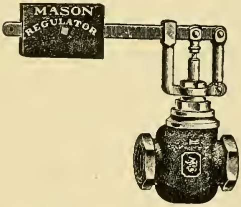


FIG. 240 E. MASON LEVER VALVE.

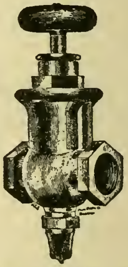


FIG. 240 F. CURTIS' PRESSURE REGULATOR.

MASON LEVER VALVES.—FIG. 240 E.

FOR CONTROLLING SUPPLY OF WATER FROM TANKS IN CONNECTION WITH BALL FLOATS.

SIZE	½	¾	1	1¼	1½	2	2½	3	3½	4
EACH	5.50	6.50	8.00	9.00	10.50	13.00	19.50	25.00	31.00	37.00

CURTIS' PRESSURE REGULATOR.—FIG. 240 F.

SIZE	¾	1	1¼	1½	2	2½	3	4	5	6	7	8
EACH	22.00	22.00	28.00	35.00	44.00	57.00	72.00	100.00	135.00	180.00	210.00	250.00

WALWORTH REGRINDING VALVES.

STANDARD WEIGHT.

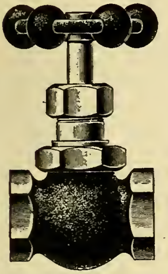


FIG. 240 H. REGRINDING GLOBE VALVE.

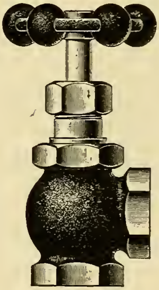


FIG. 240 J. REGRINDING ANGLE VALVE.

WALWORTH REGRINDING VALVES.—FIGS. 240 H AND 240 J.

SIZE	$\frac{1}{4}$	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{3}{4}$	1	$1\frac{1}{4}$	$1\frac{1}{2}$	2	$2\frac{1}{2}$	3
FIG. 240 H ...... EACH	.70	.85	1.15	1.45	2.00	2.80	3.90	6.20	12.00	16.50
FIG. 240 J ...... EACH	.70	.85	1.15	1.45	2.00	2.80	3.90	6.20	12.00	16.50
CROSS VALVES .... EACH	1.00	1.00	1.50	2.00	2.70	3.50	5.10	8.00	16.00	24.00

WALWORTH REGRINDING VALVES. FLANGED.

SIZE	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{3}{4}$	1	$1\frac{1}{4}$	$1\frac{1}{2}$	2	$2\frac{1}{2}$	3
GLOBE VALVES .... EACH	2.60	3.20	4.00	5.50	7.90	10.60	14.50	21.90	32.50
ANGLE VALVES .... EACH	2.60	3.20	4.00	5.50	7.90	10.60	14.50	21.90	32.50

DIMENSIONS WALWORTH REGRINDING VALVES.

SIZE	$\frac{1}{4}$	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{3}{4}$	1	$1\frac{1}{4}$	$1\frac{1}{2}$	2	$2\frac{1}{2}$	3
FACE TO FACE, GLOBE VALVES, SCREW ENDS	$1\frac{7}{8}$	$1\frac{15}{16}$	$2\frac{9}{32}$	$2\frac{5}{8}$	$3\frac{1}{4}$	$3\frac{9}{16}$	$4\frac{1}{16}$	$4\frac{7}{8}$	$6\frac{1}{16}$	$6\frac{7}{8}$
CENTER TO FACE, ANGLE OR CROSS VALVES, SCREW ENDS	$\frac{15}{16}$	$\frac{31}{32}$	$1\frac{9}{64}$	$1\frac{5}{16}$	$1\frac{5}{8}$	$1\frac{25}{32}$	$2\frac{1}{32}$	$2\frac{7}{16}$	$3\frac{1}{32}$	$3\frac{7}{16}$
FACE TO FACE, FLANGED GLOBE VALVES	....	$3\frac{1}{8}$	$3\frac{15}{16}$	$4\frac{3}{8}$	$4\frac{15}{16}$	$5\frac{9}{16}$	$6\frac{1}{16}$	$7\frac{1}{4}$	$8\frac{1}{4}$	$8\frac{3}{4}$
CENTER TO FACE, FLANGED ANGLE OR CROSS VALVES	....	$1\frac{9}{16}$	$1\frac{31}{32}$	$2\frac{3}{16}$	$2\frac{15}{32}$	$2\frac{25}{32}$	$3\frac{1}{32}$	$3\frac{5}{8}$	$4\frac{1}{8}$	$4\frac{3}{8}$
DIAMETER OF FLANGES	....	$2\frac{1}{2}$	3	$3\frac{1}{2}$	4	$4\frac{1}{2}$	5	6	7	$7\frac{1}{2}$

WALWORTH REGRINDING VALVES. EXTRA HEAVY.

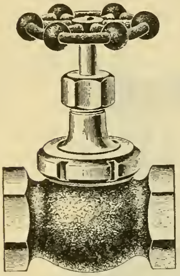


FIG. 240 K. REGRINDING GLOBE VALVE.

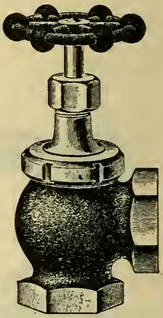


FIG. 240 L. REGRINDING ANGLE VALVE.

WALWORTH REGRINDING VALVES. EXTRA HEAVY.—FIGS. 240 K AND 240 L.

SIZE	1/4	3/8	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3
FIGS. 240 K AND 240 L ...... EACH	1.35	1.50	1.80	2.40	3.50	4.90	7.00	10.50	17.50	27.70

DIMENSIONS WALWORTH REGRINDING VALVES. EXTRA HEAVY. SCREWED.

SIZE	1/4	3/8	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3
FACE TO FACE GLOBE VALVES	2 1/4	2 1/4	2 1/2	3 1/32	3 1/2	3 15/16	4 9/16	5 7/16	6 13/16	7 9/16
CENTER TO FACE ANGLE VALVES	1 1/8	1 1/8	1 1/4	1 33/64	1 3/4	1 31/32	2 9/32	2 23/32	3 13/32	3 25/32

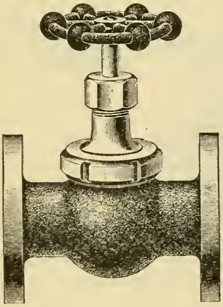


FIG. 240 M. REGRINDING GLOBE VALVE.

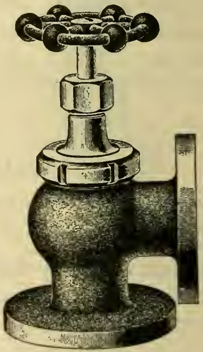


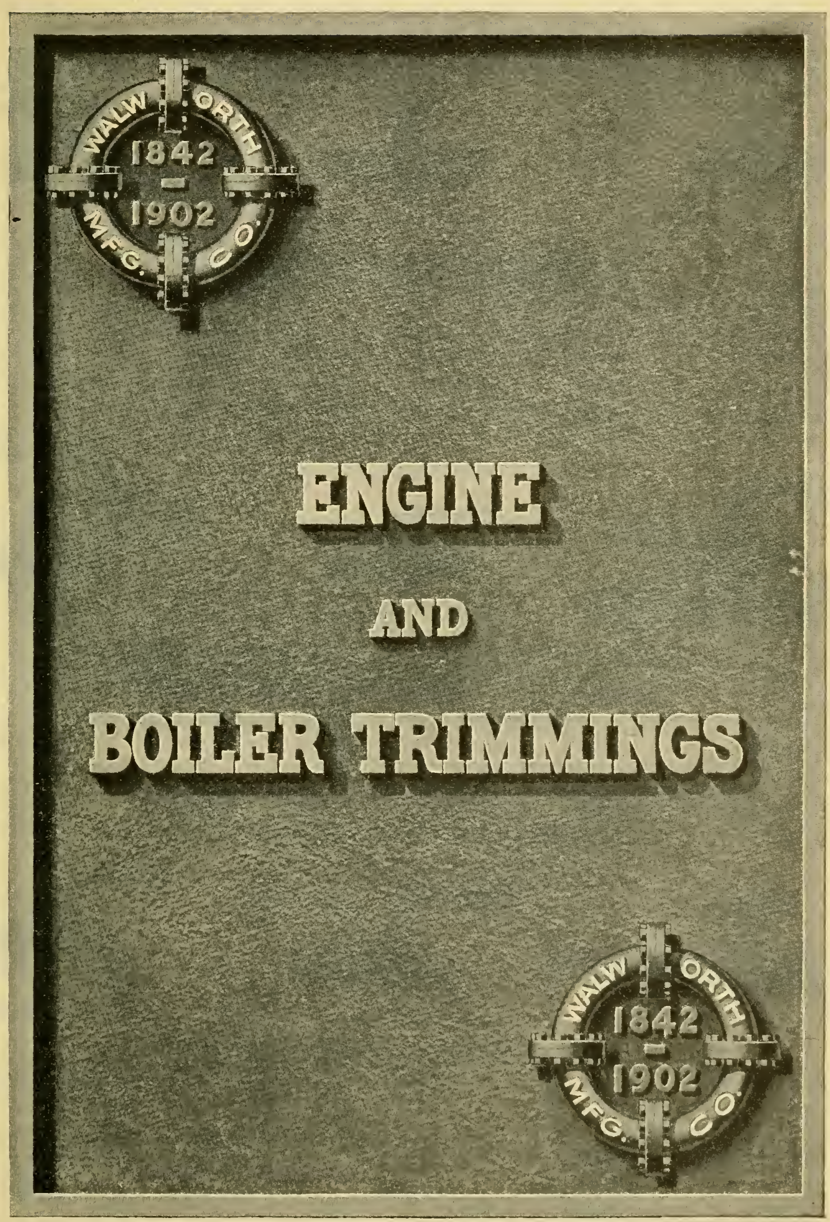
FIG. 240 P. REGRINDING ANGLE VALVE.

WALWORTH REGRINDING VALVES. EXTRA HEAVY. FLANGED.

SIZE	3/8	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3
FIGS. 240 M AND 240 P .... EACH	2.60	3.20	4.00	5.50	7.90	10.60	14.50	21.90	32.50

DIMENSIONS WALWORTH REGRINDING VALVES. EXTRA HEAVY. FLANGED.

SIZE	3/8	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3
FACE TO FACE GLOBE VALVES	3 1/8	4	4 1/2	5 1/8	5 3/4	6 1/4	7 1/2	8 1/2	9
CENTER TO FACE ANGLE VALVES	1 9/16	2	2 1/4	2 9/16	2 7/8	3 1/8	3 3/4	4 1/4	4 1/2
DIAMETER OF FLANGES	2 1/2	3	3 1/2	4	4 1/2	5	6	7	7 1/2



WALWORTH 1842 — 1902 MFG. CO.

ENGINE AND BOILER TRIMMINGS

WALWORTH 1842 — 1902 MFG. CO.

ENGINE AND BOILER TRIMMINGS.

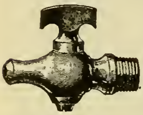


FIG. 250. SINGLE THREAD.

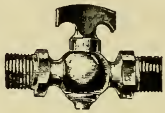


FIG. 251. DOUBLE THREAD.

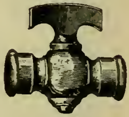


FIG. 252. FEMALE.

TEE HEAD AIR COCKS.—FIGS. 250, 251 AND 252.

SIZE	1/8	1/4	3/8	1/2
FIG. 250 EACH	.40	.45	.50	.60
FIG. 251 EACH	.55	.65	.75	.90
FIG. 252 EACH	.65	.70	.85	1.00

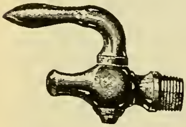


FIG. 253. SINGLE THREAD.

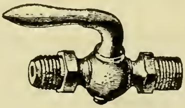


FIG. 254. DOUBLE THREAD.

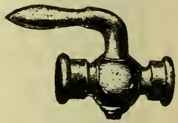


FIG. 255. FEMALE.

LEVER HANDLE AIR COCKS.—FIGS. 253, 254 AND 255.

SIZE	1/8	1/4	3/8	1/2
FIG. 253 EACH	.55	.60	.65	.75
FIG. 254 EACH	.70	.80	.90	1.05
FIG. 255 EACH	.80	.85	1.00	1.15

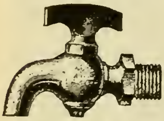


FIG. 256. BIBB AIR COCK.

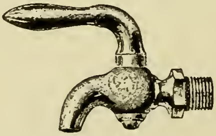


FIG. 257. BIBB AIR COCK.

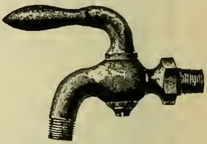


FIG. 258. DOUBLE THREAD.

BIBB AIR COCKS.—FIGS. 256, 257 AND 258.

SIZE	1/8	1/4	3/8	1/2
FIG. 256 EACH	.70	.80	.90	1.00
FIG. 257 EACH	.85	.95	1.05	1.15
FIG. 258 EACH	.95	1.15	1.25	1.50

ENGINE AND BOILER TRIMMINGS.

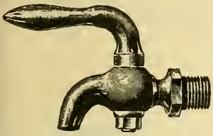


FIG. 259. SINGLE THREAD.

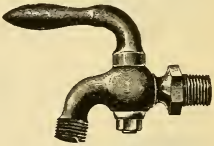


FIG. 260. DOUBLE THREAD.

BIBB CYLINDER COCKS.—FIGS. 259 AND 260.

SIZE	$\frac{1}{4}$	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{3}{4}$
FIG. 259, EACH	1.15	1.30	1.85	2.60
FIG. 260, EACH	1.25	1.50	2.10	2.70

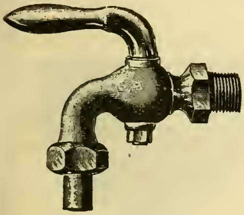


FIG. 261. BENT UNION.

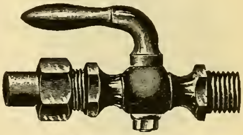


FIG. 262. STRAIGHT UNION.

CYLINDER COCKS, WITH UNIONS.—FIGS. 261 AND 262.

SIZE	$\frac{1}{4}$	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{3}{4}$
FIG. 261 EACH	1.75	2.00	2.50	3.75
FIG. 262 EACH	1.75	2.00	2.50	3.75

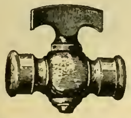


FIG. 263. FEMALE TEE HEAD.

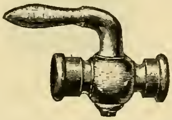


FIG. 264. FEMALE LEVER HANDLED.

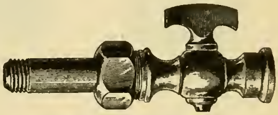


FIG. 265. WITH UNION.

STEAM GAUGE COCKS.—FIGS. 263, 264 AND 265.

SIZE	$\frac{1}{4}$
FIG. 263 EACH	.70
FIG. 264 EACH	85
FIG. 265 EACH	1.75

ENGINE AND BOILER TRIMMINGS.

BRASS FITTINGS — MALLEABLE PATTERN.

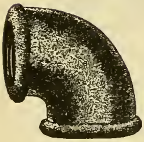


FIG. 266. ELBOW.

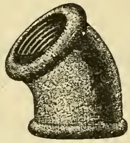


FIG 267 ELBOW 45°

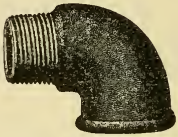


FIG. 267 A. STREET ELBOW.

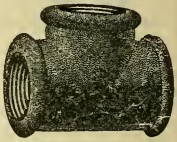


FIG. 268. TEE.

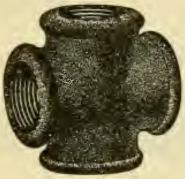


FIG 269 CROSS.

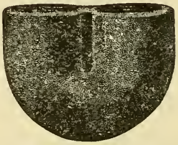


FIG 270 RETURN BEND—CLOSE PATTERN.

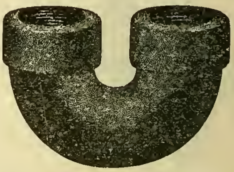


FIG. 271 RETURN BEND—OPEN PATTERN.

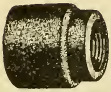


FIG 272
REDUCING COUPLING

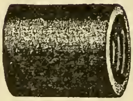


FIG 273.
COUPLING

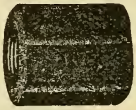


FIG. 274.
COUPLING, RIGHT AND LEFT.

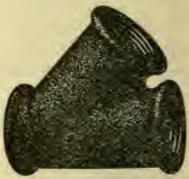


FIG. 274 A.
Y BRANCH.

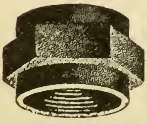


FIG 275 CAP

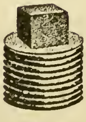


FIG 276 PLUG.

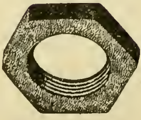


FIG. 277 LOCKNUT

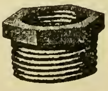


FIG. 278. BUSHING.

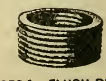


FIG. 278 A. FLUSH BUSHING.

ENGINE AND BOILER TRIMMINGS.

BRASS FITTINGS—MALLEABLE PATTERN—ROUGH.

IRON-PIPE THREAD.

SIZE	⅛	¼	⅜	½	¾	1	1¼	1½	2	2½	3	3½	4
ELBOWS	.12	.17	.21	.28	.35	.50	.85	1.10	1.50	3.50	4.50	7.00	10.00
ELBOWS—REDUCING	....	.22	.26	.35	.45	.62	1.10	1.40	1.90	4.40	5.65	8.75	12.50
ELBOWS 45°	.15	.22	.27	.34	.42	.70	1.02	1.32	1.80	4.20	5.40	8.40	12.00
STREET ELBOWS	.33	.37	.40	.55	.75	1.00	1.80	2.50	3.25	.....	.....	.....	....
TEES	.15	.20	.30	.40	.50	.75	1.00	1.30	1.75	4.00	5.50	9.00	13.00
TEES—REDUCING	.....	.25	.38	.50	.63	.95	1.25	1.65	2.20	5.00	6.90	11.25	16.25
DROP ELBOWS—FEMALE	....	.....	.42	.56	70	1.00	1.70	....	.....	.....	.....	.....	...
DROP TEES—FEMALE	.....	.....	.60	.80	1.00	1.50	2.00	....	.....	.....	.....	.....	....
CROSSES	.....	.30	.40	.50	.60	.80	1.50	2.00	3.50	5.00	7.00	10.00	14.50
CROSSES—REDUCING	.....	.38	.50	.65	.75	1.00	1.90	2.50	4.40	6.25	8.75	12.50	18.00
Y BRANCHES	.....	.....	.44	.55	1.00	1.25	2.55	2.90	4.50	6.50	.....	.....	....
REDUCING COUPLINGS	.....	.16	.22	.32	.45	.65	.90	1.12	1.85	3.00	4.50	.....	....
PLUGS	.09	.10	.12	.15	.20	.28	.40	.50	.90	1.25	2.00	3.00	4.00
CAPS	.15	.15	.20	.25	.35	.45	.60	.80	1.10	2.00	3.00	5.00	6.00
LOCKNUTS	.10	.10	.12	.15	.20	.30	.45	.70	.95	1.50	2.75	4.00	4.50
BUSHINGS	.....	.10	.12	.14	.21	.38	.50	.67	1.00	1.50	2.50	.....	....
FLUSH BUSHINGS	.....	.10	.12	.14	.21	.38	.50	.67	1.00	.....	.....	.....	....
COUPLINGS	.10	.14	.16	.25	.37	.50	.60	.90	1.35	2.40	3.50	5.00	6.00
COUPLINGS, RIGHT AND LEFT	.....	.17	.20	.30	.45	.60	.75	1.12	1.75	.....	.....	...	....
CLOSE NIPPLES	.12	.15	.20	.25	.30	.40	.60	.90	1.25	2.50	3.50	5.10	6.75
SHOULDER NIPPLES	.14	.18	.25	.30	.38	.50	.75	1.10	1.45	2.75	4.00	6.00	8.00
LONG NIPPLES	.15	.20	.30	.35	.45	.60	.90	1.25	1.60	3.00	4.50	....	....
RETURN BENDS, CLOSE	.....	.....	.....	.56	.70	1.00	1.70	2.20	3.00	.....	.....	.....	....
RETURN BENDS, OPEN	.....	.....	.....	.70	.88	1.25	2.15	2.75	3.75	.....	.....	.....	....

Finished Fittings double above list.

The lengths of Nipples listed above are same as the lengths given for Iron Pipe Nipples on page 68.

FOR MALLEABLE PATTERN FINE THREAD FITTINGS, SEE PAGE 167.

ENGINE AND BOILER TRIMMINGS.

BRASS FITTINGS — CAST-IRON PATTERN.

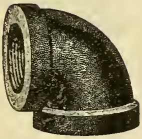


FIG. 279. ELBOW.

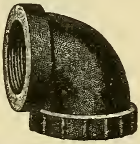


FIG. 280. ELBOW — RIGHT AND LEFT

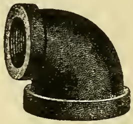


FIG. 281 REDUCING ELBOW.

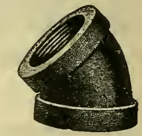


FIG 282. ELBOW 45°.

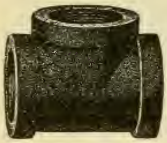


FIG. 283. TEE.

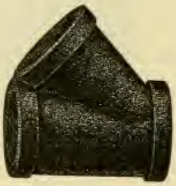


FIG. 283 A Y BRANCH.

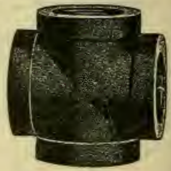


FIG. 284 CROSS.

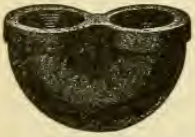


FIG 285 RETURN BEND— CLOSE PATTERN.

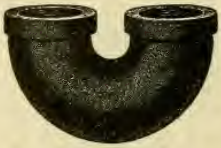


FIG. 286. RETURN BEND- OPEN PATTERN.

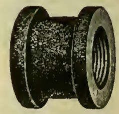


FIG 286 A. COUPLING, FLAT BEAD.

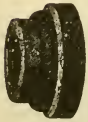


FIG 288 REDUCING COUPLING.

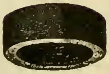


FIG. 289. CAP.

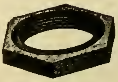


FIG. 290 LOCKNUT.

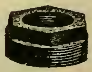


FIG. 291 BUSHING.

ENGINE AND BOILER TRIMMINGS

BRASS FITTINGS — CAST-IRON PATTERN. — ROUGH

IRON PIPE THREAD

SIZE	⅛	¼	⅜	½	¾	1	1¼	1½	2	2½	3	3½	4
ELBOWS	.	...	.28	.36	.70	1.00	1.50	2.00	3.00	5 50	8.50	12.50	16.00
ELBOWS–RED.	...	...	.32	.42	.80	1.15	1.72	2.30	3.45	6.30	9.75	....	...
ELBOWS–R. AND L.	...	...	.32	.42	.80	1.15	1.72	2.30	3.45	6.30	9.75	...	...
ELBOWS 45°	...	...	.32	.43	.84	1.20	1.80	2.40	3.60	6.60	10.20	15.50	20.00
TEES	...	...	.40	.65	1.00	1.35	2.00	3.00	4.50	7.50	11 00	16.50	20.00
TEES–REDUCING	...	...	.46	.75	1 15	1.55	2.30	3.45	5.20	8.60	12.65		22.00
Y BRANCHES	...	...	....	1.30	1.35	2.25	2.90	4.25	6.50	9.60	13 75	22.50	30.00
CROSSES	...	...	....	.90	1.30	1.80	2.75	4.00	5 25	9.00	14.00	....	...
CROSSES–RED.	...	...	....	1.04	1.50	2.10	3.15	4.60	6.00	10.35	16.00	...	..
RET. BENDS–C. P.	...	...	....	.70	.85	1.00	2.25	2.75	4.50	....	...	...	...
RET BENDS–O. P.	...	...	....	.75	1.00	1.75	3.00	3.75	6.00	...	....	...	...
COUPLINGS, FLAT BEAD	...	.26	.41	.67	.90	1.12	1.60	2.10	3.25	5.85	7 40	9.50	13 00

Finished Caps, Locknuts, Reducing Couplings, furnished from Cast-Iron patterns when desired, at special prices.

BRASS FITTINGS — MALLEABLE PATTERN — ROUGH.

FINE THREAD.

SIZE	⅝	¾	⅞	1	1¼	1½
ELBOWS	.26	.35	.48	.53	.65	.85
ELBOWS 45	.35	.40	.55	.60	.75	.96
TEES	.30	.40	.55	.60	.85	1.10
CROSSES	.45	.60	.85	.90	1.25	1.65
REDUCING COUPLINGS	.30	.38	.53	.60	.68	.95
PLUGS	.20	.25	.35	.40	.45	.65
CAPS	.20	.25	.35	.40	.45	.65
ACORN CAPS	.20	.25	.35	.40	.45	.65
BUSHINGS HEXAGON	.20	.25	.35	.40	.45	.60
COUPLINGS	.20	.25	.35	.40	.50	.65
UNIONS	.56	.75	.90	1.00	1.40	1.90
DROP ELBOWS, SINGLE EARS	.40	.53	.70	.80	....	....
DROP TEES, SINGLE EARS	.50	.60	.80	.90	1.10	1.43
CLOSE NIPPLES	.20	.25	.35	.40	.45	.65
LONG NIPPLES	.30	.35	.45	.55	.60	.90

Drop Elbows and Tees have all openings Fine Thread, unless otherwise specified.
In the above list, Unions only are finished.
The lengths of Nipples listed above are same as the lengths given for Iron Pipe Nipples on page 68.
Special prices on Finished Fittings will be made on application.
Plain or Drop Elbows and Tees when furnished with Iron Pipe Thread Outlets, 15 per cent. additional.

ENGINE AND BOILER TRIMMINGS.

BRASS UNIONS.

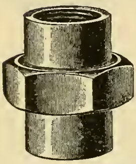


FIG. 291A. UNION.
STANDARD WEIGHT.

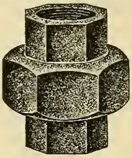


FIG. 291B. UNION
OCTAGON PATTERN.

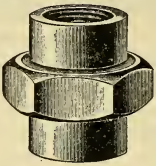


FIG. 291C. UNION.
EXTRA HEAVY.

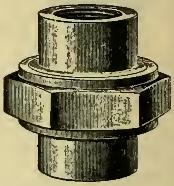


FIG. 291D. UNION.
HYDRAULIC.

BRASS UNIONS.—FIGS. 291 A, 291 B, 291 C, AND 291 D.

SIZE	⅛	¼	⅜	½	¾	1	1¼	1½	2	2½	3	3½	4
FIG. 291A	.32	.36	.50	.70	.90	1.25	1.70	2.50	3.60	6.00	7.75	18.00	23.00
FIG. 291B, ROUGH	.35	.40	.55	.75	1.00	1.40	1.90	2.75	4.00	6.50	8.50	13.50	18.50
FIG. 291B, FINISHED	.50	.55	.75	1.00	1.50	2.00	2.50	3.00	4.50	7.50	10.00	....	...
FIG. 291C	....	1.10	1.40	1.60	1.85	3.00	4.00	5.25	7.50	10.00	15.00	22.50	....
FIG. 291D	....	1.35	1.65	2.25	3.25	4.25	6.75	7.75	10.25	13.00	19.50	...	...

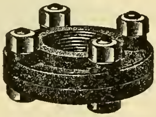


FIG. 291E. FLANGE UNION.
STANDARD WEIGHT.

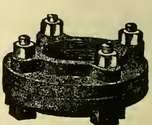


FIG. 291F. FLANGE UNION.
HEAVY PATTERN.

BRASS FLANGE UNIONS.—FIGS. 291 E AND 291 F.

IRON BOLTS.

SIZE	¾	1	1¼	1½	2	2½	3	3½	4	4½	5	6
FIG. 291E	3.10	3.45	4.50	4.75	5.25	8.00	9.50	13.00	17.50	23.00	26.00	....
FIG. 291F	3.35	4.10	5.00	5.75	8.25	9.75	14.50	17.50	22.50	30.00	34.00	40.00

HYDRAULIC BRASS FITTINGS.

FOR 5,000 LBS. PRESSURE

SIZE	½	¾	1	1¼	1½	2
ELBOWS	3.65	4.65	6.50	9.75	14.00	28.00
ELBOWS, 45°	3.45	4.20	5.85	8.75	11.75	
TEES	5.35	7.00	9.90	15.25	20.00	32.00

ENGINE AND BOILER TRIMMINGS.

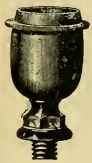


FIG. 292 PLAIN.

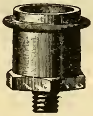


FIG. 293. LOCOMOTIVE

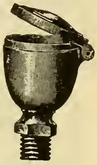


FIG 294 HINGE LID.

PLAIN BRASS OIL CUPS.—FIGS. 292, 293 AND 294.

NO.	00	0	0½	1	1½	2	3	4	5	6	7	8
DIAMETER BODY	⅝	¾	⅞	1	1⅛	1¼	1½	1¾	2	2¼	2½	2¾
THREADED FOR IRON PIPE	⅛	⅛	⅛	⅛	¼	¼	¼	⅜	½	½	½	½
FIG. 292 EACH	.25	.30	.35	.40	.50	.60	.90	1 25	1.75	2.25	2.75	3.50
FIG. 293 EACH	....	.35	40	.60	75	1.00	1.50	2.00	....	....	....	....
FIG. 294 EACH	....	....	.85	1.20	1.60	....	2.70	....	....	....	....	....

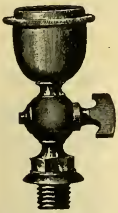


FIG. 295. TEE HANDLE OIL CUP

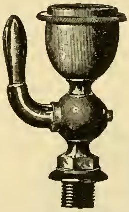


FIG. 296 LEVER HANDLE OIL CUP

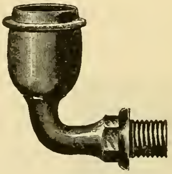


FIG. 296 1-2. ELBOW SHANK OIL CUP

TEE AND LEVER HANDLED OIL CUPS.—FIGS. 295, 296 AND 296 1-2

NO.	1	2	3	4	5
DIAMETER BODY	1	1¼	1½	1¾	2
THREADED FOR IRON PIPE	⅛	¼	⅜	½	½
FIG. 295 EACH	1.00	1 50	2 00	3 00	3 75
FIG. 296 EACH	1.35	1 60	2.20	3 25	4.00
FIG. 296 1-2 EACH	.70	1 00	1.40	2.30	

ENGINE AND BOILER TRIMMINGS.

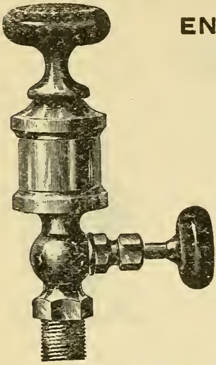


FIG. 297. PLAIN LUBRICATOR.

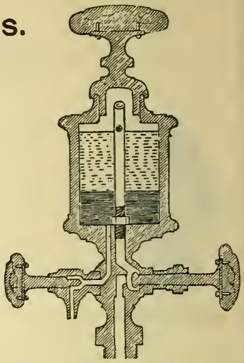


FIG. 298. AUTOMATIC LUBRICATOR

PLAIN LUBRICATORS.—FIG. 297.

NO.	1	2	3	4	5	6	7	8	9	10
DIAMETER BODY	1	1¼	1½	1⅝	1¾	2	2¼	2½	3	3½
THREADED FOR IRON PIPE	⅜	⅜	½	½	½	½	¾	¾	¾	¾
EACH	2.00	2.20	2.40	2.50	2.60	2.90	3.25	3.75	4.75	7.00

AUTOMATIC LUBRICATORS.—FIG. 298.

DIAMETER BODY	1	1½	2	2½	3	3½	4	5	6
CAPACITY PINTS	1/16	⅛	⅛	½	¾	1	2	3	5
PLAIN EACH	3.00	4.50	6.00	8.00	10.00	13.00	16.00	. .	....
WITH CROSS HANDLE, HEAVY EACH	....	....	...	.	14.00	18.00	21.00		.
WITH YOKE TOP, HEAVY EACH	....	....	.		16.00	.. .	24.00	33.00	42.00

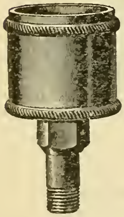


FIG. 299. PLAIN GREASE CUP.

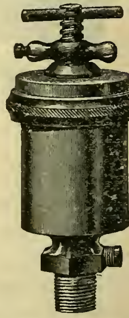


FIG. 300. AUTOMATIC GREASE CUP.

PLAIN AND AUTOMATIC GREASE CUPS.—FIGS. 299 AND 300.

NO.	1	1½	2	2½	3	3½	4	4½	5
DIAMETER	1	1¼	1½	1¾	2	2¼	2½	3	3
PIPE THREAD	⅛	¼	¼	¼	⅜	⅜	½	¾	¾
FIG. 299. BRASS EACH	.50	.75	1.00	. . .	1.50	. . .	2.25	. . .	3.00
FIG. 300. BRASS EACH	2.50	3.00	3.75	4.50	5.50	6.50	8.00	10.00	....

ENGINE AND BOILER TRIMMINGS.

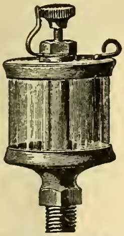


FIG. 301. SLIDE-TOP GLASS CUP.

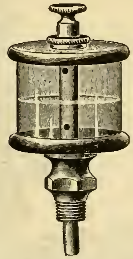


FIG. 302. NEEDLE-CRANK PIN CUP.

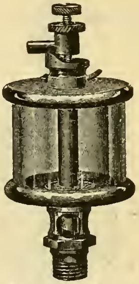


FIG. 305. STOP-FEED CUP, ROUND BASE.

SLIDE-TOP CLASS CUPS.—FIG. 301.

NO.	000	00	0	1	1½	2	3	4	5	6
DIAMETER OF CLASS	1	1⅛	1¼	1⅜	1¾	2	2¼	2½	3	3½
CAPACITY OUNCES	⅛	¼	½	1	1½	2½	4	5	10	18
THREADED FOR PIPE	⅛	⅛	⅛	¼	¼	⅜	⅜	⅜	½	½
PLAIN EACH	70	75	80	1 00	1 25	1.50	1 90	2 40	3 10	4.00
NICKEL PLATED EACH	80	85	95	1 20	1 50	1 75	2.20	2.75	3.50	4.50
EXTRA CLASSES EACH	05	06	08	10	10	12	15	.25	35	.65

NEEDLE-CRANK PIN CLASS CUPS.—FIG. 302.

NO.	7 H	8 H	9 H	10 H	11 H	12 H	13 H
DIAMETER OF CLASS	1	1¼	1½	1¾	2	2¼	2½
CAPACITY OUNCES	¼	½	1	1½	2½	3½	5
THREADED FOR PIPE	⅛	⅛	⅛	¼	¼	¼	⅜
FIG. 302, Brass EACH	.67	75	92	1 08	1 25	1.50	2.00
FIG. 302, Nickel Plated EACH	84	92	1 08	1 25	1 42	1.67	2.25
EXTRA CLASSES EACH	14	18	22	28	.34	42	50

STOP-FEED CLASS CUPS.—FIG. 305.

NO.	7	8	9	10	11	12	13	14	15	16
DIAMETER	1	1¼	1½	1¾	2	2¼	2½	2¾	3	3½
CAPACITY OUNCES	¼	½	1	1½	2½	3½	5	7	10	15
PIPE THREAD	⅛	⅛	⅛	¼	¼	¼	⅜	⅜	½	½
PLAIN EACH	1 00	1 17	1.33	1.58	1 83	2 18	2 42	2.67	3.50	4.58
NICKEL PLATED EACH	1 25	1.42	1 58	1.75	2 08	2 42	2.67	2.92	4.18	5 17
EXTRA CLASSES EACH	14	.18	.22	28	34	.42	.50	60	70	80

"SLOPOVER" CRANK CUPS.—FIG. 305 A.

NO.	11 K	12 K	13 K	14 K	15 K
DIAMETER OF CLASS	2	2¼	2½	2¾	3
BRASS EACH	3.75	4 25	4.75	5.50	6.50
NICKEL PLATED, EACH	4.25	4.50	5.50	6.50	7.50
EXTRA CLASSES, EACH	34	.42	.50	.60	70

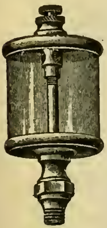


FIG. 305 A. "SLOPOVER" CRANK CUP

CAS ENCINE CUPS.—FIG. 305 B.

NO.	11 L	12 L	13 L	14 L	15 L	16 L
DIAMETER CLASS	2	2¼	2½	2¾	3	3½
CAPACITY OUNCES	2½	3½	5	7	10	15
BRASS EACH	2.75	3 25	4.00	4.75	5.50	7.00
NICKEL PLATED, EACH	3 25	3 75	4.75	5 50	6.50	8.00
EXTRA CLASSES, EACH	34	42	.50	60	70	80

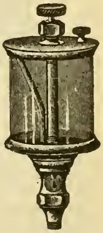


FIG. 305 B. GAS ENGINE CUP.

ENGINE AND BOILER TRIMMINGS.

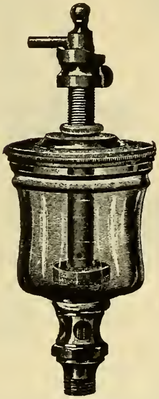


FIG. 307. FIXED COVER STOP-FEED CUP.

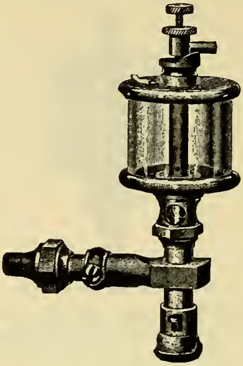


FIG. 308. WIPER CUP AND BLADE.

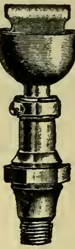


FIG. 309. TELESCOPIC BLADE.

STOP-FEED GLASS CUPS.—FIG. 307.

FIXED COVERS.

NO.	0 B	1 B	2 B	3 B	3½ B	4 B	5 B	6 B
CAPACITY ......OUNCES	¼	1¼	3	4½	6	8½	1 Pt.	1 Qt.
THREADED FOR PIPE	⅛	¼	¼	¼	⅜	⅜	½	½
FIXED COVERS, BRASS..EACH	1.92	2.17	2.50	3.00	3.67	4.09	5.42	6.67
FIXED COVERS, Nickel Plated, EACH	2.17	2.42	2.75	3.25	4.09	4.50	5.84	7.09
EXTRA GLASSES ......EACH	.18	.24	.30	.35	.42	.50	.60	.80

WIPER CUPS.—FIG. 308.

Each, including blade, and No. 12 Cup, Brass, $6.00; Nickel plated, $7.00.
Blades only, Fig. 309, Brass, $1.00; Nickel plated, $1.50.

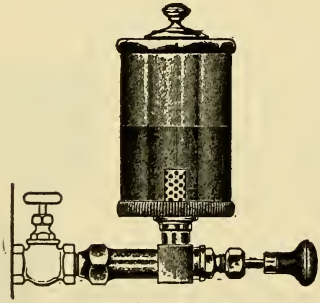


FIG. 309 A. GLASS OIL PUMP.

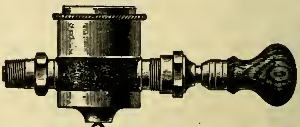


FIG. 309 B. BRASS OIL PUMP

OIL PUMPS.—FIGS. 309 A AND 309 B.

SIZE	¼ Pt.	⅓ Pt.	½ Pt.	1 Pt.	1 Qt.
FIG. 309 A. BRASS	....	4.00	5.00	7.00	12.00
FIG. 309 A. NICKEL PLATED	....	4.50	5.50	8.00	13.00
FIG. 309 B. BRASS, EACH	3.50	4.25	5.00	7.50	12.00

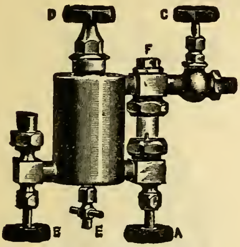


FIG. 321. PHILLIPS SIGHT-FEED LUBRICATOR. CLASS A.

ENGINE AND BOILER TRIMMINGS.

SIGHT-FEED LUBRICATORS.—CLASS A.—FIG. 321.

Directions for Operating.—Connect the Lubricator to steam pipe above throttle when possible, and run pipe from valve (B) about twelve inches above valve (C). Fill with oil at (D), and with water at (F). Make both valves down tight, and start valve (B) about one-half turn. Open valve (C) about one turn, and regulate flow by valve (A). When the oil is exhausted, close valves (B) and (A) tight, and open draw-off (E), then remove cap (D). When the water has run off, close draw-off (E), fill and operate as before.

The cup will not work well if there is any leak at valve or joint.

SIZE	¼ Pt.	⅓ Pt.	½ Pt.	1 Pt.	1½ Pt.
FINISHED BRASS .... EACH	4.25	5.25	6.25	8.00	10.00
NICKEL PLATED .... EACH	5.00	6.00	7.00	9.00	12.00
EXTRA GLASSES .... EACH	.16	.16	.20	.24	.30

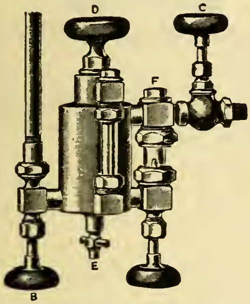


FIG. 322. PHILLIPS SIGHT-FEED LUBRICATOR. CLASS B.

PHILLIPS SIGHT-FEED LUBRICATORS.—CLASS B.

FIG. 322.

Connect the Lubricator to steam pipe above throttle when possible. Fill with oil at (D), and with water at (F). Make both valves down tight, and start valve (B) about one-half turn. Open valve (C) about one turn, and regulate by valve (A). When the oil is exhausted, close valves (A) and (B), open draw-off (E), and remove cap (D). When the water has run off, close draw-off (E) tight, and fill and operate as before.

It is important that there be no leak at valves or joints.

SIZE	⅓ Pt.	½ Pt.	1 Pt.	1½ Pt.	1 Qt.	½ Gal.
FINISHED BRASS .. EACH	13.50	16.00	20.00	25.00	30.00	45.00
NICKEL PLATED ... EACH	16.00	19.00	24.00	30.00	35.00	50.00
EXTRA GLASSES .. EACH	.16	.20	.24	.30	.30	....

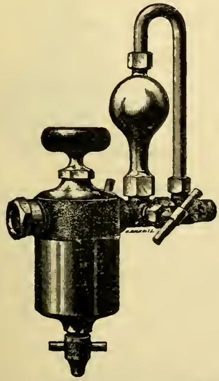


FIG 324½. SWIFT SIGHT-FEED LUBRICATOR.

THE "SWIFT" SINGLE CONNECTION AUTOMATIC SIGHT-FEED LUBRICATOR.—FIG. 324½.

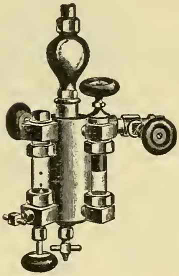
CLASS F. S. C.

For Traction and Portable Engines, Steam Pumps, Etc.

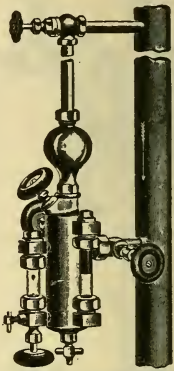
PRICE LIST.

CAPACITY	¼ Pt.	⅓ Pt.	½ Pt.	1 Pt.	1½ Pt.	1 Qt.
BRASS FINISH	3.50	3.75	4.00	6.00	6.75	7.50
NICKEL PLATED	3.90	4.15	4.40	6.40	7.15	7.90
PIPE THREAD	⅜"	⅜"	⅜"	½"	½"	½"

ENGINE AND BOILER TRIMMINGS.



DETROIT LUBRICATOR. DOUBLE CONNECTION.
FIG. 324 A. ⅓ AND ½ PINT SIZES.



DETROIT LUBRICATOR. DOUBLE CONNECTION.
FIG. 324 A. PINT SIZE AND UPWARDS

DETROIT LUBRICATORS.—FIG. 324A.

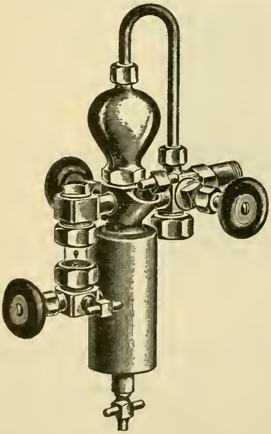
DOUBLE CONNECTION.

SIZE FOR CYLINDER	⅓ Pint Under 10 in.	½ Pint 10 to 12 in.	1 Pint 12 to 18 in.	1 Quart 18 to 30 in.	½ Gal. 30 in. and over	1 Gal.
BRASS FINISH	5.10	5.70	7.80	10.50	15.40	19.80
PIPE THREAD ON SUPPORT ARM ....INCHES	½	½	½	½	¾	¾

SIZES OF GLASSES USED.

SIGHT FEED	⅝ x 2	¾ x 3	¾ x 3	¾ x 3¼	¾ x 3¼	¾ x 3¼
GAUGE	⅝ x 2	⅝ x 3¼	⅝ x 4⅜	⅝ x 4 3/16	⅝ x 6¾	⅝ x 9¾

DIRECTIONS SENT WITH EACH LUBRICATOR.



DETROIT LUBRICATOR. SINGLE CONNECTION.
FIG. 324B. SIZE OF GLASS ¾ X 2⅛.

DETROIT LUBRICATORS.—FIG. 324B.

SINGLE CONNECTION.

FOR TRACTION ENGINES, PORTABLE ENGINES, STEAM PUMPS, ETC.

CAN BE CONNECTED TO EITHER HORIZONTAL OR VERTICAL STEAM PIPE, OR PERPENDICULARLY INTO THE STEAM CHEST.

SIZE	¼ Pint	⅓ Pint	½ Pint	Pint	Quart
BRASS FINISH.......EACH	4.80	5.10	5.70	7.80	11.00
PIPE THREAD ON SUPPORT ARM, INCHES	½	½	½	½	½

ENGINE AND BOILER TRIMMINGS.

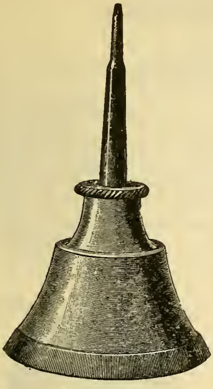


FIG. 328. MALLEABLE OILER.
HAMMER'S PATENT.

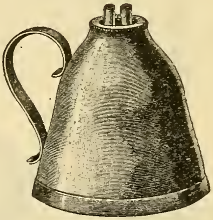


FIG. 329. MALLEABLE HAND LAMP.
HAMMER'S PATENT

MALLEABLE OILERS AND HAND LAMPS. — FIGS. 328 AND 329.

FIG. 328. MALLEABLE OILERS	No 11. $3.60 per doz	No. 12 $4.00 per doz	No. 13 $4 40 per doz.
FIG. 329. MALLEABLE HAND LAMPS	With Wick Tubes . . . . $5 00 per doz		

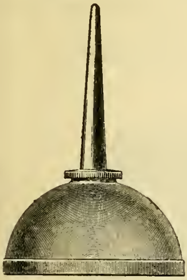


FIG. 331 No 13 AND SMALLER.

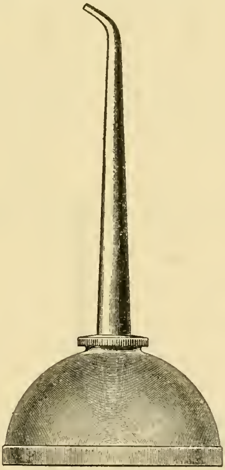


FIG. 332. No. 14 AND LARGER.

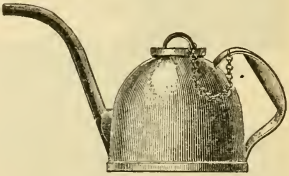


FIG. 332 A. STEEL TALLOW POT

BRASS AND STEEL OILERS. — FIGS. 331 AND 332.

NO.	12	13	14	14*a*	14*b*	15	16
DIAMETER	2¾	3⅜	3⅜	3¾	3¾	4¼	4¼
LENGTH SPOUT	2½	3	9	3	9	3	9
STEEL ... PER DOZ.	4.50	5.50	6.50	7.50	8.50	9.25	10.50
BRASS ... PER DOZ.	6.50	8.00	9 20	....	.....	12.00	14 00

STEEL TALLOW POTS. — FIG. 332 A.

NO. 212. 5 IN. DIAMETER, 5 IN. HIGH, CAPACITY 1 QT. ....PER DOZ.	21 00
NO. 213. 6 IN. DIAMETER, 6 IN. HIGH, CAPACITY 2 QT. ....PER DOZ.	25.00

ENGINE AND BOILER TRIMMINGS.

RAILROAD OILERS.—FIG. 333.

NO.	10	11	111	17	18	18*a*
DIAMETER	3⅝	4¼	5	3⅝	4¼	5
HEIGHT	5	6	8	5	6	8
LENGTH SPOUT	12	18	10 or 14	12	18	10 or 14
CAPACITY	1 Pt.	1 Qt.	2 Qt.	1 Pt.	1 Qt.	2 Qt.
STEEL PER DOZ.	14.00	18.00	20.00	...		..
BRASS PER DOZ.	. .	...		18 00	21 00	24.00

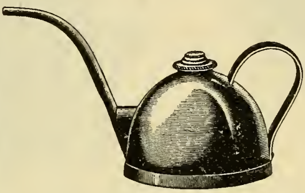


FIG. 334. ENGINEERS' FILLER.

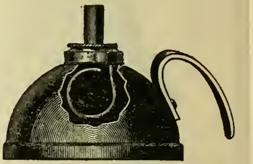


FIG. 334 A. STEEL JACKET LAMP

ENGINEERS' FILLERS.—FIG. 334.

NO.	19	19*a*	210	211	190	200	201
DIAMETER	4½	4¾	5	6	4¾	5	6
HEIGHT	3½	4	5	6	4	5	6
CAPACITY	1 Pt.	1½ Pt.	1 Qt.	2 Qt.	1½ Pt.	1 Qt.	2 Qt.
STEEL PER DOZ.	14.00	17.00	20.00	24.00	. . . . .	. . . .	. . .
BRASS PER DOZ.	. . . .	. . . .	. . .	. . . .	22.00	30.00	34.00

STEEL JACKET LAMPS.—FIG. 334 A.

NO.	20	20½	21
DIAMETER	3⅝	3¾	4¼
PER DOZ.	6.00	9.00	12.00

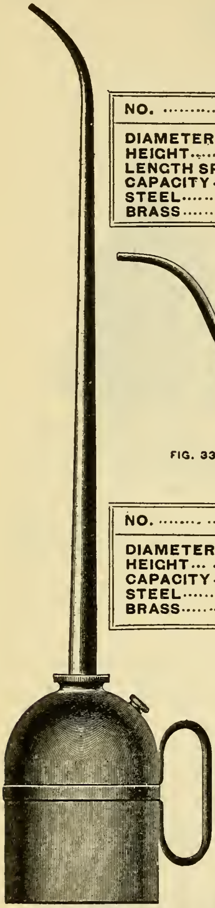


FIG. 333. RAILROAD OILER.

OILER SETS.—FIG. 337.

NO.	30	40	50	60
NUMBER OF PIECES	5	6	5	6
ENGINEERS' BRASS SETS EACH	6.00	9.00	. . .	. .
ENGINEERS' NICKEL PLATED SETS EACH	. . .	. . .	8.00	11.00
STEAMBOAT BRASS SETS EACH	. . .	. .	. . .	. . .
STEAMBOAT NICKEL PLATED SETS EACH	. . .	. . .	. . .	. . .
NO.	**70**	**80**	**90**	**100**
NUMBER OF PIECES	5	6	5	6
ENGINEERS' BRASS SETS EACH	. . .	. . .	. . .	. . .
ENGINEERS' NICKEL PLATED SETS EACH	. . .	. . .	. . .	. . .
STEAMBOAT BRASS SETS EACH	7.00	10 00	. . .	. .
STEAMBOAT NICKEL PLATED SETS EACH	. . .	. . .	9.00	12.00

Steamboat sets are so made as to prevent the motion of the vessel displacing the oilers.

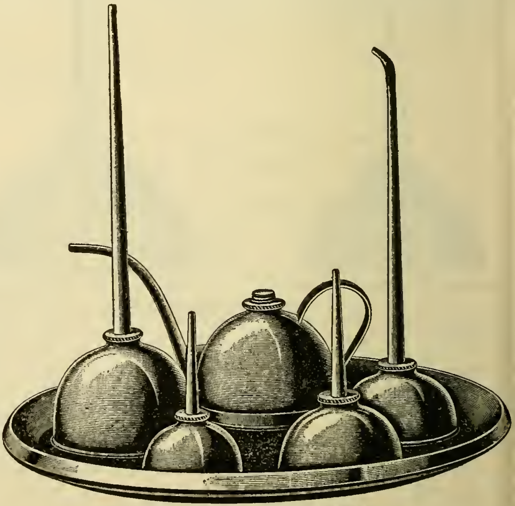


FIG. 337. ENGINEERS' SET.

ENGINE AND BOILER TRIMMINGS.

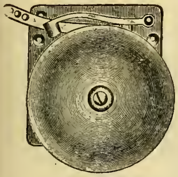


FIG. 338. TRIP GONG.

BRASS TRIP GONGS.—FIG. 338.

DIAMETER	3	4	5	6	7	8	10	12	14	16	18
BRASS EACH	.85	1.05	1.40	2.00	2.85	3.85	7.00	12.50	17.65	21.65	25.85

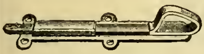


FIG. 339. GONG PULL.

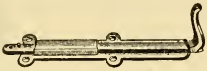


FIG. 340. GONG PULL.

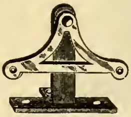


FIG. 341. GONG CRANK.

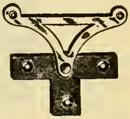


FIG. 342. GONG CRANK.

GONG PULLS.—FIGS. 339 AND 340.

NO.	1	2	3	4
FOR GONGS	4 to 5	6, 7, and 8	10	12 and larger
EACH	.40	.85	1.75	2.25

GONG CRANKS.—FIGS. 341 AND 342.

Small size, each, 17c. Large size, each, 25c. Extra large size, each, 42c

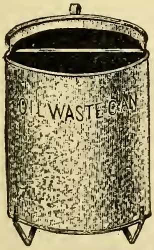


FIG. 342 A. OIL WASTE CAN.

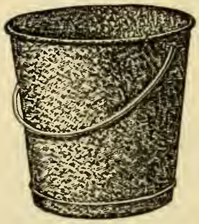


FIG. 342 B. GALVANIZED MILL PAILS.

OIL WASTE CANS.—FIG. 342 A.

11 x 15	$1.50 each
14 x 18	2.00 each
14 x 26	3.00 each

GALVANIZED MILL PAILS.—FIG. 342 B.

HEAVY.

10 QUART	PER DOZ.	5.50
12 QUART	PER DOZ.	6.00
14 QUART	PER DOZ.	6.25

ENGINE AND BOILER TRIMMINGS.

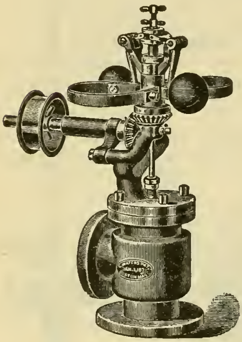


FIG. 347. CLASS B.

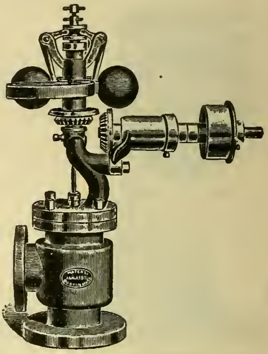


FIG. 348. CLASS A. WITH AUTOMATIC SAFETY STOP

WATERS' GOVERNORS.

SIZE OF GOVERNOR— DIAMETER OF OPENING	½	¾	1	1¼	1½	2	2¼	2½	3	3½	4	4½	5	6
CLASS B, PLAIN .... EACH	14.00	16.00	18.00	21.00	25.00	30.00	35.00	40.00	50.00	60.00	71.00	83.00	94.00	122.00
CLASS B, FINISHED.... EACH	16.00	18.00	20.00	24.00	29.00	34.00	40.00	45.00	58.00	69.00	81.00	94.00	106.00	136.00
CLASS A, PLAIN .... EACH	....	....	21.00	24.50	29.50	36.00	42.00	48.00	59.00	71.00	83.00	96.00	109.00	140.00
CLASS A, FINISHED.... EACH	....	....	23.00	27.50	33.50	40.00	47.00	53.00	67.00	80.00	93.00	107.00	121.00	154.00
Angle or Globe Stop Valve, Each	....	....	....	....	8.00	9.75	11.50	12.50	18.00	22.00	25.00	32.00	38.00	50.00

DIMENSIONS.

SIZE OF GOVERNOR— DIAMETER OF OPENING	½	¾	1	1¼	1½	2	2¼	2½	3	3½	4	4½	5	6
Diameter of Base Flange.....	3½	4	4½	5	5¾	6½	7½	8	9	10	11	12	12	14
Diameter of Side Flange.....	...	...	...	...	5	6	6½	6½	7	8	8½	9½	11	12
Diameter of Space required for High Speed Governor	6	8	8	10¼	10¾	12½	12½	12½	15	15	19	19	19	25
From Centre to Side Flange ..	1½	1⅞	2⅛	2½	2⅝	3⅛	3⅛	4⅜	5½	6	6¼	7	8⅜	8½
From Base to Centre of Inlet..	2	2¾	3	3¼	3¾	4⅛	4⅛	5	5¾	6¼	6½	7⅛	8¼	10
Extreme Height.............	10¼	13½	14	16	19	21	21	24	28	30	34	36	38	42
From Centre to End of Shaft..	6	8½	8½	9½	10½	13½	13½	14	16	17	20	21	22	23
Diameter of Pulley..........	2	2½	2½	3	3½	4	4	4	4	4	4½	4½	5	6
Width of Belt...............	¾	1	1	1½	1½	2	2	2	2	2	2½	2½	2½	2½
Revolutions per minute of High Speed Governor	500	400	400	325	325	330	330	330	250	250	250	250	250	200
Extra Speeds...............	...	600	600	430	400	...	...	...	...	...	...	...	...	...

In Ordering.— For convenience in ordering, Governors are described in two classes, "*A*" and "*B*," Class "A" having Automatic Stop Motion, and Class "B" without Stop Motion. Workmanship and quality are the same

The plain High Speed Governor in accordance with table will be sent in all cases, unless otherwise ordered. *Sizes* up to and including 1¼ inch will be sent *screwed*, unless ordered flanged. In ordering Governors, *state which class is wanted*, whether "A" or "B," Plain or Finished, and with or without Improved Angle or Globe Stop Valve. *Give the number of revolutions the engine is to run*, and the diameter of the pulley on the crank-shaft which drives the Governor, and a pulley the proper size for the Governor will be sent; otherwise, a *standard pulley* will be furnished. In ordering *springs*, always specify *size of Governor* and state *speed at which Governor is marked on top collar to run. This is important.* In ordering Valves or Linings, specify whether old one has *two ports* or *four ports*. Also state *size* of Governor, and give number (if there is one) stamped on upper flange of Valve Chamber. The *correct speed* is plainly stamped on the brass *top collar* of each Governor Arrange the pulley diameters to give the Governor the correct speed at the desired speed of engine.

ENGINE AND BOILER TRIMMINGS.

WOOD HANDLE GAUGE COCKS.—FIG. 349.

WITHOUT STUFFING-BOX.

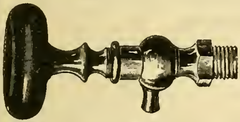


FIG. 349. WITHOUT STUFFING-BOX.

SIZE	3/8	1/2	3/4
WALWORTH PATTERN, EACH	1.10	1.20	1.35

WOOD HANDLE GAUGE COCKS.—FIG. 350.

WITH STUFFING-BOX.

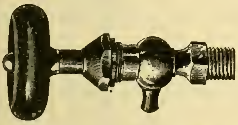


FIG. 350. WITH STUFFING-BOX

SIZE	3/8	1/2	3/4
WALWORTH PATTERN, EACH	1.35	1.50	1.70

JENKINS SEAT GAUGE COCKS.—FIG. 351.

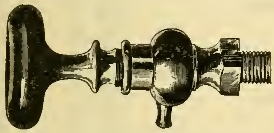


FIG. 351. JENKINS SEAT GAUGE COCK.

SIZE	3/8	1/2	3/4
EACH	1.00	1.10	1.30

ASHCROFT SELF-CLEANING GAUGE COCKS.—FIG. 352.

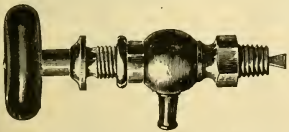


FIG. 352. ASHCROFT GAUGE COCK.

SIZE	1/2	3/4
EACH	2.25	2.50

REGISTER BALL GAUGE COCKS.—FIG. 353.

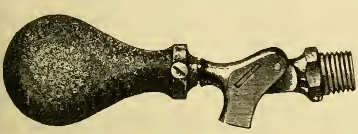


FIG. 353. REGISTER GAUGE COCK.

SIZE	3/8	1/2	3/4
FIG. 353. WITH IRON BALLS EACH	1.00	1.00	1.00
FIG. 353. WITH BRASS BALLS EACH	1.75	1.75	1.75

ENGINE AND BOILER TRIMMINGS.

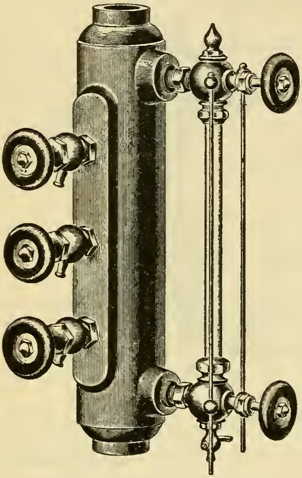


FIG. 357. GAUGE COLUMNS.

WATER GAUGE COLUMNS.—FIG. 357.

WITHOUT TRIMMINGS.

NO.	1	2	3	4	5	6
LENGTH	14⅝	16¾	19⅞	23½	25¾	28
CENTRE TO CENTRE GAUGE CONNECTION	10	12	15	18	20	22
ENDS TAPPED	¾	¾	1¼	1¼	1¼	1¼
TAPPED FOR GAUGE COCKS	⅜	½	½	¾	¾	¾
TAPPED FOR WATER GAUGE	½	½	½	¾	¾	¾
OUTSIDE DIAMETER	2⅝	3	3⅜	4	4¾	5½
PRICE EACH	1.35	1.75	2.50	3.50	5.25	6.50

GENUINE SCOTCH GLASS TUBES.

PRICE PER DOZEN.

LENGTH.	EXTERNAL DIAMETER.			
INCHES	½ & ⅝	¾	⅞	1
10	3.00	3.60	5.04	6.12
11	3.24	3.96	5.64	6.72
12	3.60	4.32	6.12	7.32
13	3.84	4.80	6.60	7.92
14	4.20	5.16	7.08	8.52
15	4.44	5.52	7.56	9.12
16	4.80	5.88	8.16	9.72
17	5.04	6.24	8.64	10.32
18	5.40	6.60	9.12	10.92
19	5.64	7.08	9.60	11.52
20	6.00	7.44	10.20	12.12
22	6.60	8.16	11.16	13.44
24	7.20	8.88	12.12	14.64
30	9.00	11.16	15.24	18.24
36	10.80	13.44	18.24	21.96
48	14.52	18.00	24.36	29.16
60	18.12	22.56	30.48	36.48
72	21.84	27.12	36.48	43.80

60 x 1¼ in., $60.00.

ENGINE AND BOILER TRIMMINGS.

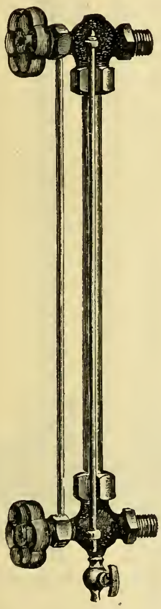


FIG. 358. NO. 00, ROUGH BODY

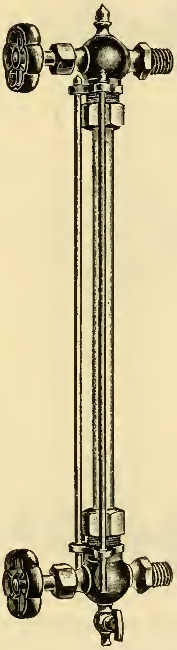


FIG. 359. NO 0, FINISHED BODY

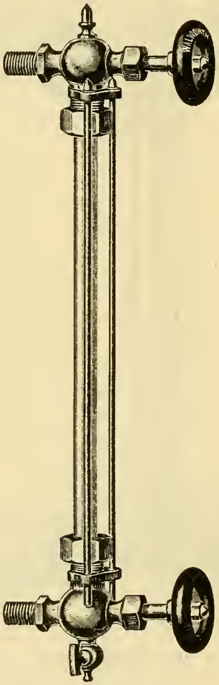


FIG. 360 NO. 0 1-2, FINISHED BODY

WATER GAUGES.—FIGS. 358, 359 AND 360.

NO.	00	0	0½
THREADED FOR PIPE	½	½	½
DIAMETER OF GLASS	⅝	⅝	⅝
LENGTH OF GLASS	12	12	12
EACH, WITHOUT GLASS	3.00	4.25	4.50

ENGINE AND BOILER TRIMMINGS.

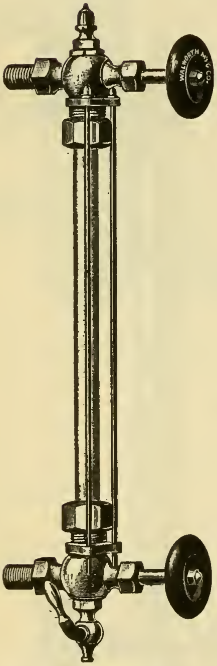

WALWORTH M'F'G CO.

FIG. 361. NO. 1. FINISHED BODY.

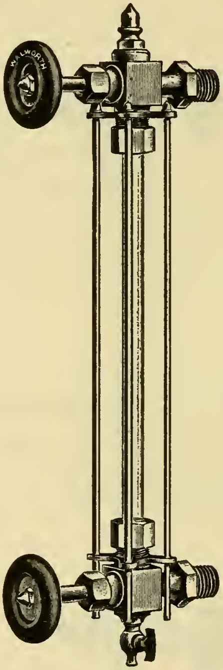


FIG. 362. NO. 1 1-2. FINISHED BODY.

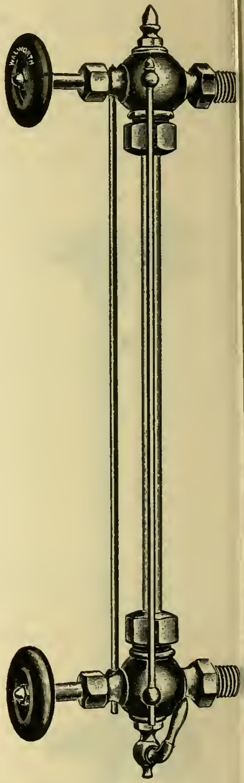


FIG. 363. NO. 2. FINISHED BODY.

WATER GAUGES.—FIGS. 361, 362 AND 363.

NO.	1	1½	2
THREADED FOR PIPE	½	½	½ or ¾
DIAMETER OF GLASS	⅝	⅝	⅝
LENGTH OF GLASS	12	12	15
EACH, WITHOUT GLASS	6.00	6.50	7.50

No. 1, Fig. 361. Glass goes through top.
No. 1½, Fig. 362. Four-rod gauge. Glass goes through top.
No. 2, Fig. 363. Glass goes through top.

ENGINE AND BOILER TRIMMINGS.

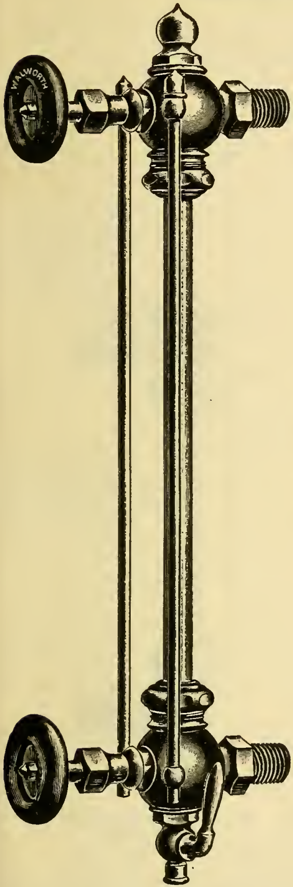


FIG. 364. No. 3. EXTRA HEAVY FINISHED BODY.

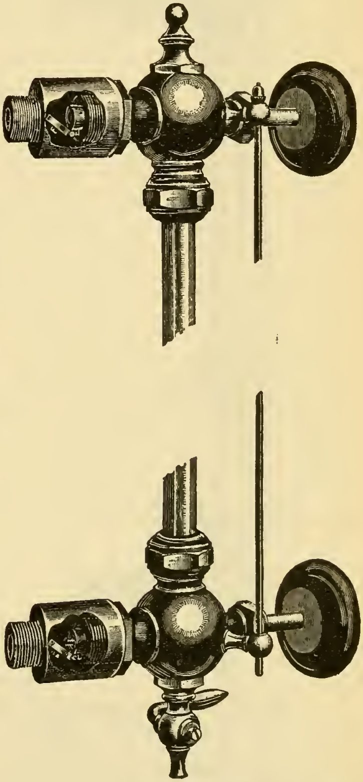


FIG. 365. AUTOMATIC SAFETY GAUGE.

WATER GAUGES.—FIG. 364.

NO. 3. THREADED FOR 3-4 PIPE. GLASS, 3-4 x 16. EACH, WITHOUT GLASS, $12.00.

Fig. 364 is an extra heavy gauge. Glass goes through top.

AUTOMATIC SAFETY WATER GAUGE.—FIG. 365.

NO.	2	3	4	5	6
THREADED FOR PIPE	½	½	¾	¾	¾
GLASS	⅝	⅝	¾	¾	¾
EACH .... WITHOUT GLASS	4.50	5.75	6.50	8.00	11.00

ENGINE AND BOILER TRIMMINGS.

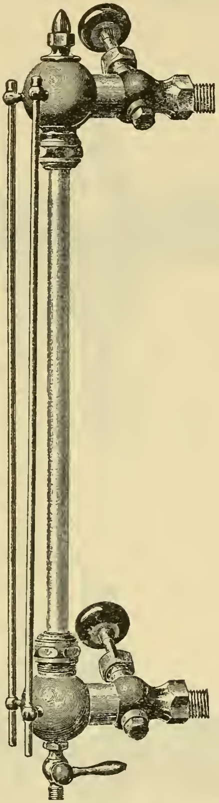


FIG. 366. AUTOMATIC GAUGE WITH STOP VALVE.
SHUTS OFF BOTH STEAM AND WATER.

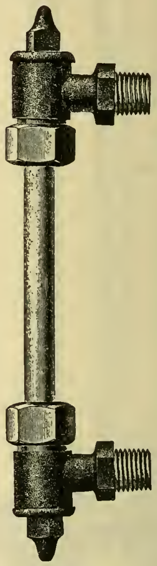


FIG. 366 A. EXPANSION TANK WATER GAUGE.

BARCLAY'S PATENT AUTOMATIC GAUGES AND VALVES.

NO.	1	2	3
THREADED FOR PIPE	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{3}{4}$
FIG. 366, COMPLETE, BRASS, WITHOUT GLASS ... EACH	9.00	10.00	14.00
FIG. 366, COMPLETE, NICKEL PLATED, WITHOUT GLASS ... EACH	9.75	10.75	15.00

EXPANSION TANK WATER GAUGE.—FIG. 366 A.

NO.	1	2
SIZE GLASS	$\frac{5}{8}$	$\frac{5}{8}$
SIZE PIPE	$\frac{3}{8}$	$\frac{1}{2}$
PRICE, WITHOUT GLASS ... EACH	3.00	3.00

ENGINE AND BOILER TRIMMINGS.

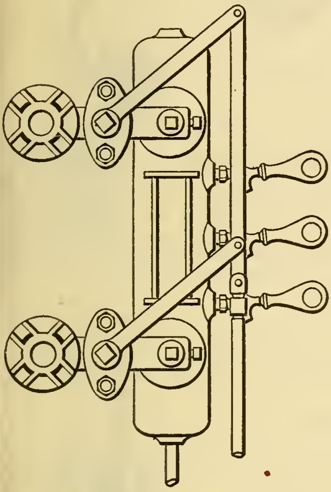
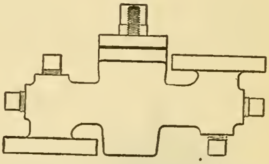


FIG. 366B. QUICK CLOSING SAFETY DEVICE.



OUTLINE OF COCK, SHOWING LOCATION OF CLEANING PLUGS.

QUICK CLOSING SAFETY DEVICE.—FIG. 366B.

FOR WATER GAUGE COLUMNS.

This device consists of two bronze cocks, top and bottom, between the gauge column and the boiler. The plugs of the cocks are provided with levers connected to a rod extending downward to within a convenient distance of the floor where the end of the rod is placed in a retaining socket. Should the gauge-glass break, the connecting rod can be instantly displaced from its retaining socket, and the weight of the rod and levers will close the cocks. This device is in use in the plants of the Metropolitan Traction Co. in New York, and in many other large power plants.

PRICES WILL BE QUOTED ON APPLICATION.

ENGINE AND BOILER TRIMMINGS.

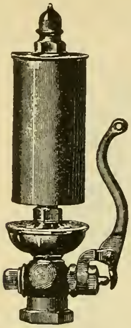


FIG. 372. WITH VALVE.

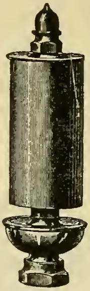


FIG. 373. PLAIN. WITHOUT VALVE.

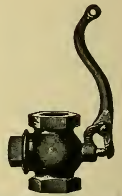


FIG. 374. WHISTLE VALVE.

ADJUSTABLE LEVER WHISTLES.—FIGS. 372 AND 373.

DIAMETER OF BELL	1	1¼	1½	2	2½	3	3½	4	5	6	8	10
SIZE PIPE	⅜	⅜	½	¾	¾	1	1	1¼	1½	2	2½	2½
FIG. 372 EACH	3.10	3.75	4.00	5.50	6.50	8.50	11.50	15.00	22.50	33.00	95.00	210.00
FIG. 373 EACH	2.20	2.75	3.00	4.35	5.25	7.25	9.50	12.00	19.00	24.00	70.00	150.00

WHISTLE VALVES.—FIG. 374.

SIZE	½	¾	1	1¼	1½	2	2½	3
EACH	2.50	3.00	3.50	5.00	6.00	9.00	18.00	27.00

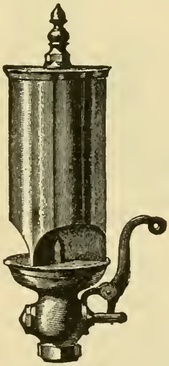


FIG 377. CHIME WHISTLE, NO. 3. WITH SIDE VALVE.

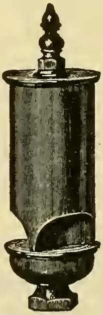


FIG. 378. WITHOUT VALVE

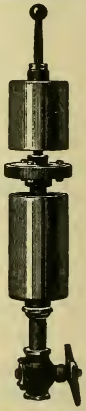


FIG. 379. STEAM GONG.

SINGLE BELL CHIME WHISTLES.—FIGS. 377 AND 378.

DIAMETER OF BELL	1½	2	3	4	5	6	8	10	12
SIZE PIPE	⅜	½	¾	1	1¼	1½	2	2½	3
FIG. 377 NO. 3, EACH	6.00	8.00	14.00	20.00	35.00	50.00	110.00	210.00	300.00
FIG. 378 NO. 1, EACH	4.50	5.00	9.50	15.00	28.00	42.00	95.00	190.00	280.00

STEAM GONGS.—FIG. 379.

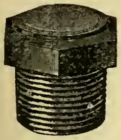
DIAMETER OF BELL	6	8	10	12	*12
SIZE PIPE	1½	2	2½	3	3
EACH	60.00	75.00	100.00	115.00	150.00
WITHOUT VALVE	51.20	63.00	84.00	95.00	130.00

* With three bells.

ENGINE AND BOILER TRIMMINGS.

FUSIBLE PLUGS.—FIG. 379 C.

FILLED WITH PURE BANCA TIN AND STAMPED WALWORTH MFG. CO. AS REQUIRED BY THE GOVERNMENT.



G. 379 C. U. S. STANDARD.

SIZE	⅜	½	¾	1	1¼	1½	2
EACH	.50	.60	.75	1.00	1.50	2 00	3.00

FUSIBLE PLUGS, LONG PATTERN.—FIG. 379 D.

FILLED WITH PURE BANCA TIN AND STAMPED WALWORTH MFG. CO. AS REQUIRED BY THE GOVERNMENT.

IG. 379 D. LONG PATTERN.

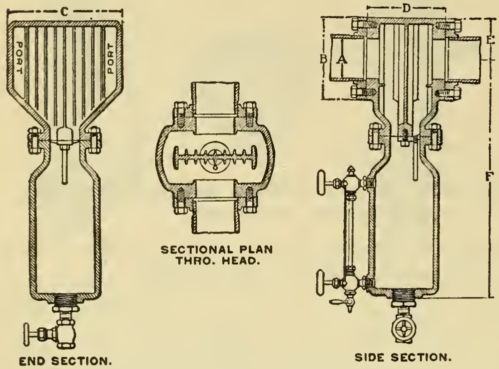
SIZE	½	¾	1	1¼	1½	2
EACH	1.10	1 50	1.75	2.40		

BOILER BUSHINGS.—FIG. 379 E.

G. 379 E. BOILER BUSHINGS.

SIZE	1¼ x 1	1½ x 1¼	2 x 1½	2 x 1½	2½ x 2	2½ x 2
LENGTH	4	3½	4	2½	3	4
EACH	3.15	2.75	4.60	2.65	4.50	7.25

COCHRANE SEPARATORS.



END SECTION.

SECTIONAL PLAN THRO. HEAD.

SIDE SECTION.

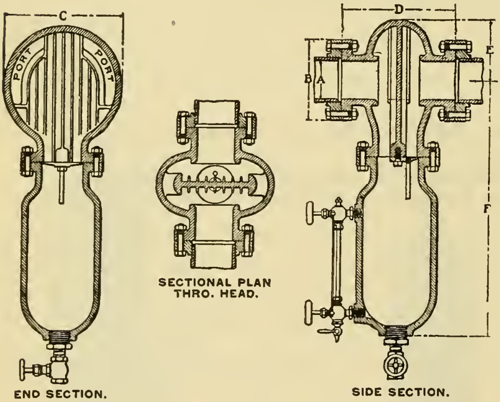
FIG. 379F. COCHRANE SEPARATORS.

COCHRANE HORIZONTAL SEPARATORS. STANDARD WEIGHT.—FIG. 379F.

FOR LIVE STEAM OR OIL SEPARATION
100 LBS. PRESSURE

PRINCIPAL DIMENSIONS OF STANDARD SIZES

A	B	D	E	F	DRIP.	Price Each.
1½″	6″	5″	2½″	18″	½″	24.00
2	6½	5¼	2¾	19	½	28.00
2½	7	5¾	3¼	20½	½	34.00
3	7½	6½	3¾	22	¾	42.00
3½	8½	7	4	23	¾	50.00
4	9	7½	4¼	24	¾	58.00
4½	9½	8¼	4½	25	1	68.00
5	10	8¾	5	27	1	76.00
6	11	10	5½	28½	1	98.00
7	12½	11½	6½	30½	1¼	116.00
8	13½	13	7	32	1¼	134.00
9	15	14	7½	34½	1¼	152.00
10	16	16	8	37	1½	170.00
12	19	18½	9	38	1½	200.00



END SECTION.

SECTIONAL PLAN THRO. HEAD.

SIDE SECTION.

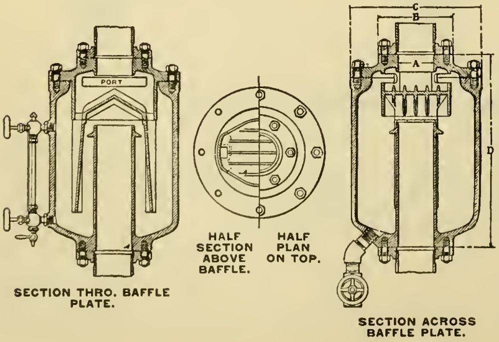
FIG. 379G. COCHRANE SEPARATORS.

COCHRANE HORIZONTAL SEPARATORS. EXTRA HEAVY. FIG. 379G.

FOR STEAM SERVICE, COMPRESSED AIR, ETC.
200 LBS. PRESSURE.

PRINCIPAL DIMENSIONS OF STANDARD SIZES.

A	B	D	E	F	DRIP.	Price Each.
3″	8¼″	11″	5¼″	25″	½″	46.00
3½	9	12	5¾	26	½	55.00
4	10	13	6⅝	27	¾	64.00
4½	10½	13½	6⅞	28	¾	75.00
5	11	14	7½	29	1	84.00
6	12½	15½	8½	32	1	108.00
7	14	17	9⅝	34	1	128.00
8	15	19	10¾	36½	1¼	147.00
10	17½	22	13	41	1½	187.00
12	20	25	15¼	45	1½	220.00



SECTION THRO. BAFFLE PLATE.

HALF SECTION ABOVE BAFFLE.

HALF PLAN ON TOP.

SECTION ACROSS BAFFLE PLATE.

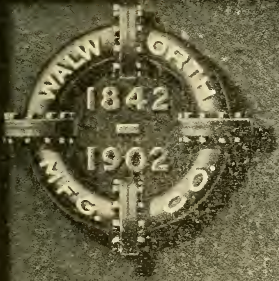
FIG. 379H. COCHRANE SEPARATORS—VERTICAL.

COCHRANE VERTICAL SEPARATORS. EXTRA HEAVY. FIG. 379H.

FOR STEAM SERVICE, COMPRESSED AIR, ETC., AND
OIL SEPARATION. 200 LBS. PRESSURE.

PRINCIPAL DIMENSIONS OF STANDARD SIZES.

A	B	C	D	DRIP.	Price Each.
3″	8¼″	13″	20″	¾″	46.00
3½	9	14	21	¾	55.00
4	10	15	22	1	64.00
4½	10½	16	23	1	75.00
5	11	17½	24	1	84.00
6	12½	19½	26	1¼	108.00
7	14	21½	27	1¼	128.00
8	15	24	28	1¼	147.00
10	17½	28	30	1½	187.00
12	20	32	32	2	220.00



INJECTORS
SAFETY VALVES
STEAM GAUGES

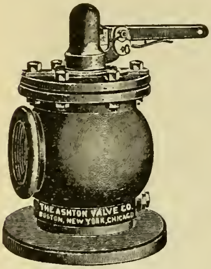


FIG. 380. NO. 3, STATIONARY

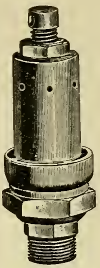


FIG. 382. NO. 6, BRASS VALVE WITHOUT LOCKUP

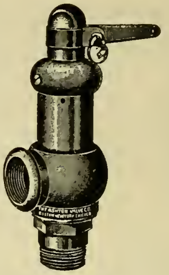


FIG. 383. NO. 9, BRASS PORTABLE

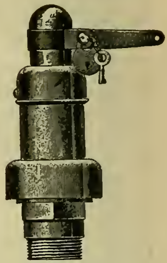


FIG. 383 A. POLICE SAFETY VALVE.

ASHTON POP SAFETY RELIEF VALVES.

SIZE	¾	1	1¼	1½	2	2½	3	3½	4	4½	5	6
DIAMETER OF INLET FLANGES	......	......	......	......	......	8	9	10	10	12	12	14
HORSE POWER OF BOILER	8	10	15	25	35	50	75	100	120	140	170	200
FIG. 380. NO. 3, IRON....EACH	......	......	......	......	30.00	40.00	55.00	64.00	70.00	80.00	85.00	125.00
FIG. 382. NO. 6, BRASS..EACH	4.50	6.50	8.50	10.00	20.00	......	......	......	......	......	......	......
FIG. 383. NO. 9, BRASS..EACH	7.00	9.00	11.00	14.00	25.00	......	......	......	......	......	......	......
FIG. 383 A, BRASS ...... EACH	6.00	8.00	10.00	12.00	22.00	......	......	......	......	......	......	......

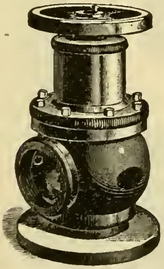


FIG. 384.
NO. 22. STANDARD UNDERWRITERS' IRON WATER RELIEF VALVE.

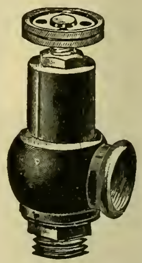


FIG. 385.
NO. 24. BRASS WATER RELIEF VALVE.

ASHTON WATER RELIEF VALVES.—FIGS. 384 AND 385.

SIZE	¾	1	1¼	1½	2	2½	3	3½	4	4½	5	6
FIG. 384. NO. 22, IRON...EACH	......	......	......	30.00	40.00	60.00	75.00	80.00	85.00	105.00	125.00	150.00
FIG. 385. NO. 24, BRASS..EACH	7.00	9.00	12.50	16.50	23.00	40.00	65.00	......	......	......	......	......

Nickel-seated valves same price as above.

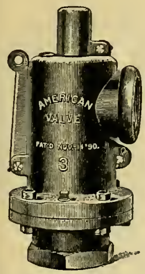


FIG. 385 A.
FOR STATIONARY BOILERS

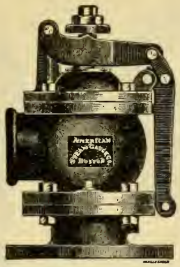


FIG. 385 B.
FOR WATER TUBE BOILERS.

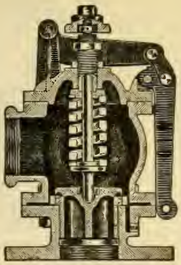


FIG. 385 B.
SECTIONAL VIEW.

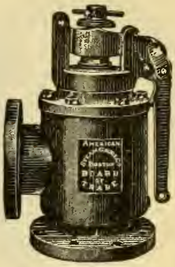


FIG. 385 C.
BOARD OF TRADE.

AMERICAN POP SAFETY VALVES.—FIGS. 385 A, 385 B, AND 385 C.

SIZE	2	2½	3	3½	4	4½	5	6
DIAM. FLANGES	Screwed	8	10	10	11	11	11	12
FOR BOILERS H.P.	30 to 40	40 to 75	75 to 100	100 to 125	125 to 150	150 to 175	175 to 200	225 and up.
FIG. 385 A EACH	30.00	50.00	65.00	80.00	100.00	115.00	125.00	180.00
FIG. 385 B EACH		50.00	65.00	80.00	100.00	115.00	125.00	180.00
FIG. 385 C EACH	30.00	50.00	65.00	80.00	100.00	115.00	125.00	180.00

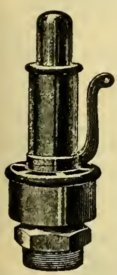


FIG. 385 D.
FOR PORTABLE ENGINES,
BRASS.

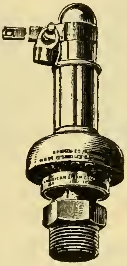


FIG. 385 E.
POLICE SAFETY
VALVE.

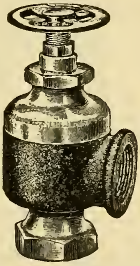


FIG. 385 F.
BRASS UNDERWRITER RELIEF
VALVE.

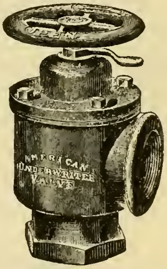


FIG. 385 G.
IRON UNDERWRITER RELIEF
VALVE.

AMERICAN POP SAFETY VALVES.—FIGS. 385 D AND 385 E.

SIZE	¾	1	1¼	1½	2	2½	3	3½	4	5
FOR BOILERS H.P.	3 to 6	3 to 10	10 to 20	20 to 30	30 to 40	40 to 75	75 to 100	100 to 125	125 to 150	150 to 175
FIG. 385 D EACH	10.00	12.00	15.00	20.00	30.00	50.00	65.00	80.00	100.00	125.00
FIG. 385 E EACH		12.00	15.00	20.00	30.00	50.00	65.00	80.00	100.00	

AMERICAN RELIEF VALVES.—FIGS. 385 F AND 385 G.

SIZE	1	1¼	1½	2	2½	3	3½	4	5	6
FIG. 385 F EACH	12.00	15.00	20.00	30.00	50.00	65.00				
FIG. 385 G EACH				30.00	50.00	65.00	80.00	100.00	150.00	200.00

Relief Valves 2″ and larger furnished either screwed or flanged

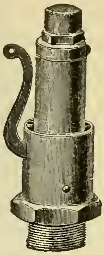


FIG. 397. BRASS, PORTABLE.

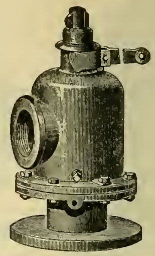


FIG. 398. STATIONARY AND MARINE NICKEL SEAT.

CONSOLIDATED POP SAFETY VALVES.—FIG. 397.

SIZE	¾	1	1¼	1½	2	2½
HORSE POWER OF BOILER	8	12	18	20	30	40
FIG. 397 EACH	8.00	10.00	15.00	20.00	30.00	40.00

CONSOLIDATED POP SAFETY VALVES.—FIG. 398.

SIZE	1	1¼	1½	2	2½	3	3½	4	4½	5	6
HORSE POWER OF BOILER	10	15	30	50	75	100	125	150	175	200	300
FIG. 398 EACH	15.00	20.00	30.00	40.00	55.00	75.00	87.00	100.00	125.00	150.00	175.00

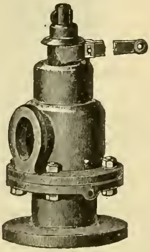


FIG 399. STATIONARY AND MARINE

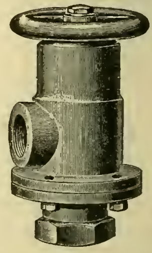


FIG. 400 WATER RELIEF VALVE.

CONSOLIDATED POP SAFETY AND WATER RELIEF VALVES.—FIGS. 399 AND 400.

SIZE	1	1¼	1½	2	2½	3	3½	4	4½	5	6
HORSE POWER OF BOILER	10	15	30	50	75	100	125	150	175	200	300
FIG. 399 EACH	....	....	....	35.00	45.00	60.00	75.00	90.00	95.00	100.00	150.00
FIG. 400 EACH	....	....	30.00	40.00	55.00	75.00	85.00	100.00	....	125.00	150.00

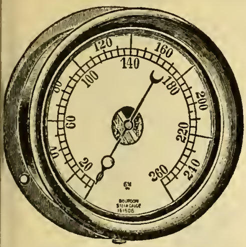


FIG. 403. PRESSURE GAUGE.

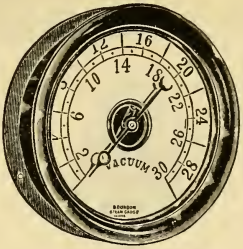


FIG. 403 A. VACUUM GAUGE.

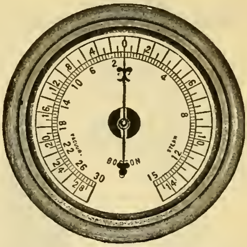


FIG. 403 B. COMPOUND PRESSURE AND VACUUM GAUGE.

STEAM GAUGES.—FIGS. 403, 403 A, 403 B.

SIZE DIAL	2	2½	3	3½	4½	5	5½	6	6¾	8½	10	12
FIGS. 403, 403 A, IRON CASE, BR. RING, EA.	6.00	6.00	6.00	7.00	8.00	8.00	10.00	13.00	16.00	22.00	32.00	50.00
FIGS. 403, 403 A, BRASS CASE	8.00	8.00	8.00	9.00	10.00	11.00	12.00	16.00	20.00	30.00	40.00	75.00
FIGS. 403, 403 A, NICKEL PLATED	8.60	8.60	8.60	9.75	11.00	12.00	13.25	17.50	22.00	32.50	43.00	79.00
FIG. 403 B, IRON CASE	.	..	..	10.00	12.00	14.00	14.00	16.00	20.00	30.00	40.00	60.00
FIG. 403 B, BRASS CASE	..	..	.	12.00	14.00	16.00	16.00	20.00	25.00	40.00	50.00	80.00
FIG. 403 B, NICKEL PLATED	..	..	..	12.75	15.00	17.25	17.25	21.50	27.00	42.50	53.00	84.00

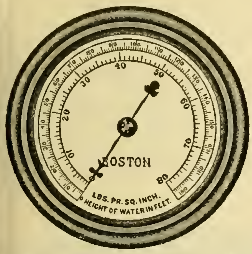

BOSTON
LBS. PR. SQ. INCH.
HEIGHT OF WATER IN FEET.

FIG. 403 C. COMBINATION WATER GAUGE.

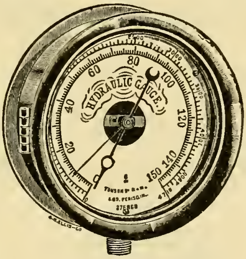

HYDRAULIC GAUGE.

FIG. 403 D. HYDRAULIC GAUGE.

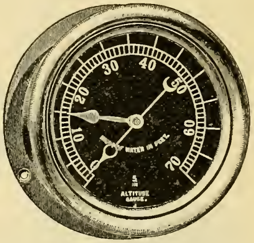

WATER IN FEET.
ALTITUDE GAUGE.

FIG. 403 E. ALTITUDE GAUGE.

WATER PRESSURE GAUGES.—FIGS. 403 C, 403 D.

SIZE DIAL	4½	5	5½	6	6¾	8½	10	12
FIG. 403 C, IRON CASE	12.00	12.00	14.00	16.00	20.00	30.00	40.00	60.00
FIG. 403 C, BRASS CASE	14.00	14.00	16.00	20.00	25.00	40.00	50.00	80.00
FIG. 403 C, NICKEL PLATED	15.00	15.00	17.25	21.50	27.00	42.50	53.00	84.00
FIG. 403 D, IRON CASE	*25.00	*30.00	..	35.00	50.00	70.00	90.00	110.00
FIG. 403 D, BRASS CASE	*30.00	*35.00	..	40.00	60.00	80.00	100.00	125.00
FIG. 403 D, NICKEL PLATED	*31.00	*36.00	..	41.50	62.00	82.50	103.00	129.00

* 4½″ and 5″ Gauges for pressures not exceeding 2,500 lbs.

ALTITUDE GAUGES.—FIG. 403 E.

WITH BLACK OR WHITE DIALS AS ORDERED.

SIZE DIAL	3½	4½	5	5½	6	6¾	8½	10	12
FIG. 403 E, IRON CASE	10.00	12.00	14.00	14.00	16.00	20.00	30.00	40.00	60.00
FIG. 403 E, WITH NICKEL PLATED RING	10.18	12.20	14.25	14.25	16.50	20.60	30.75	41.00	61.50
FIG. 403 E, BRASS CASE	12.00	14.00	16.00	16.00	20.00	25.00	40.00	50.00	80.00
FIG. 403 E, NICKEL PLATED	12.75	15.00	17.25	17.25	21.50	27.00	42.50	53.00	84.00

BLACK DIALS SENT WITH FIG. 403 E UNLESS OTHERWISE SPECIFIED.

STEAM GAUGE SIPHONS.

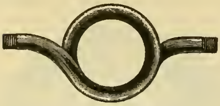


FIG. 408 A. COIL SIPHON.

COIL SIPHONS.—FIG. 408 A.

EACH	.50

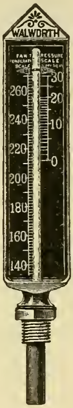


FIG. 410 C.

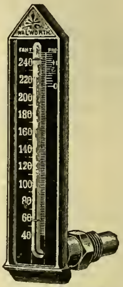


FIG. 410 D ANGLE.

THERMOMETERS.

FIG. 410 C. STRAIGHT	Showing temperature on one side and pounds pressure on the other. . Each 1.00
FIG. 410 D. ANGLE	Showing temperature on one side and pounds pressure on the other. . Each 1.20

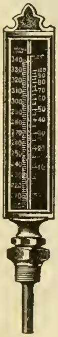


FIG. 410 E. STRAIGHT.

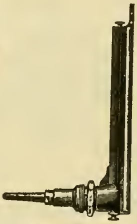
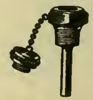


FIG. 410 F ANGLE.



SEPARABLE SOCKET WITH CAP.

H. & M. STEAM AND POWER PLANT THERMOMETERS.—FIGS. 410 E AND 410 F.

WITH SEPARABLE SOCKET.

FEEDWATER.	ECONOMIZER.	THERMO-STEAM.
Scale . . . . 50° to 240°	Scale . . . . 100° to 350°	Pressure Scale . . . . . . 0 to 100 lbs.
		Temperature Scale . . 200° to 340°
Straight Stem, 9 inch Case . . 22.50	Straight Stem, 9 inch Case . . 22.50	Straight Stem, 9 inch Case . . 22.50
Angle Stem, 9 inch Case 26.25	Angle Stem, 9 inch Case 26.25	Angle Stem, 9 inch Case 26.25
Straight Stem, 12 inch Case . . 28.50	Straight Stem, 12 inch Case . . 28.50	Straight Stem, 12 inch Case . . 28.50
Angle Stem, 12 inch Case . . . 32.25	Angle Stem, 12 inch Case . . . 32.25	Angle Stem, 12 inch Case . . . 32.25

INJECTORS AND EJECTORS.

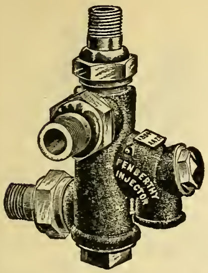


FIG. 411. PENBERTHY INJECTOR.

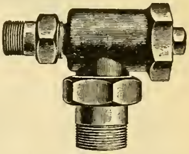


FIG. 411A HANCOCK EJECTOR.

PENBERTHY INJECTORS.—FIG. 411.

NO.	00	A	AA	B	BB	C	CC	D	DD	E	EE	F	FF
SIZE PIPE	3/8	1/2	1/2	3/4	3/4	1	1	1¼	1¼	1½	1½	2	2
CAPACITY PER HOUR IN GALLONS, 1 TO 6 FT. LIFT, 45 TO 75 LBS. PRESSURE Maximum	80	120	165	250	340	475	575	750	920	1,300	1,740	2,270	2,800
CAPACITY PER HOUR IN GALLONS, 1 TO 6 FT. LIFT, 45 TO 75 LBS. PRESSURE Minimum	55	70	90	135	165	300	350	400	500	700	900	1,100	1,400
HORSE POWER	4 to 8	8 to 15	15 to 20	20 to 30	30 to 40	40 to 60	60 to 72	72 to 93	93 to 120	120 to 160	160 to 220	220 to 290	290 to 350
PRICE EACH	16.00	18.00	20.00	25.00	30.00	40.00	45.00	55.00	60.00	75.00	90.00	110.00	125.00

HANCOCK EJECTORS.—FIG. 411A.

NO.	1	2	3	4	5	6	7	8	9	10	11
SIZE STEAM PIPE	3/8	3/8	1/2	1/2	3/4	1	1¼	1½	2	2½	2½
SIZE SUCTION AND DISCHARGE PIPE	1/2	3/4	1	1¼	1½	2	2½	3	4	5	6
CAPACITY GALLONS PER MINUTE	4	9	16	25	37	65	100	147	260	405	583
BRASS EACH	8.00	10.00	15.00	20.00	....	....	....	....	....	....	....
IRON EACH	....	....	....	....	25.00	35.00	45.00	55.00	70.00	90.00	125.00

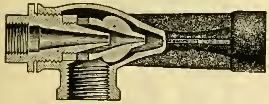


FIG. 411B. COLL'S DEFIANCE PUMP.

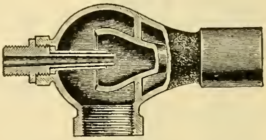


FIG. 411C. COLL'S PATENT EJECTOR.

COLL'S DEFIANCE PUMP.—FIG. 411B.

WARRANTED TO ELEVATE WATER 75 FEET.

SIZE SUCTION AND DISCHARGE PIPE	3/4	1	1¼	1½	2	2½	3	4	5	6
SIZE STEAM PIPE	3/8	1/2	3/4	1	1	1¼	1¼	1½	1½	1½
CAPACITY IN GALLONS AT 50 LBS. STEAM PRESSURE	280	350	850	1,400	2,300	2,800	3,500	6,000	13,000	16,000
BRASS EACH	12.00	16.00	25.00	35.00	50.00	65.00	85.00	100.00	150.00	200.00

Strainers for above accompany each pump, without extra charge.

COLL'S PATENT EJECTORS.—FIG. 411C.

FOR ELEVATIONS NOT EXCEEDING 35 FEET.

SIZE SUCTION AND DISCHARGE PIPE	3/4	1	1¼	1½	2	2½	3	4	5	6
SIZE STEAM PIPE	1/2	3/4	1	1	1¼	1½	1½	1½	2	2
CAPACITY IN GALLONS AT 40 LBS. STEAM PRESSURE	650	890	1,250	1,960	3,200	5,125	8,050	9,800	1,300	16,000
IRON EACH	8.00	10.00	15.00	20.00	24.00	28.00	32.00	52.00	72.00	96.00
STRAINERS EACH	....	1.00	1.00	1.50	1.50	2.00	2.50	4.00	5.00	6 00

INJECTORS AND EJECTORS.

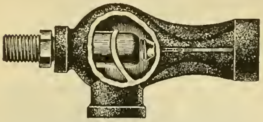


FIG. 411D. SHERRIFF'S PATENT EJECTOR.

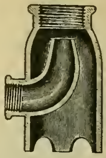


FIG. 411E. McKNIGHT'S BILGE PUMP.

SHERRIFF'S PATENT EJECTORS.—FIG. 411D.

FOR ELEVATIONS NOT EXCEEDING 35 FEET.

SIZE SUCTION AND DISCHARGE PIPE	1	1¼	1½	2	2½	3
SIZE STEAM PIPE	¾	¾	1	1¼	1½	1½
CAPACITY GALLONS AT 40 POUNDS STEAM PRESSURE	800	1,050	1,600	3,000	4,500	7,000
BRASS EACH	10.00	15.00	20.00	24.00	28.00	38.00
STRAINERS EACH	1.00	1.00	1.50	1.50	2.00	2.50

McKNIGHT'S BILGE PUMPS.—FIG. 411E.

SIZE DISCHARGE PIPE	1	1¼	1½	2	2½	3
SIZE STEAM PIPE	½	¾	¾	1	1	1¼
EACH	3.00	4.00	4.75	6.00	7.00	8.00

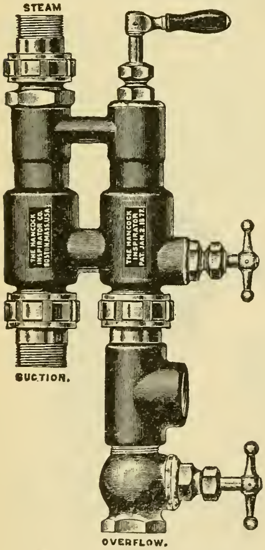
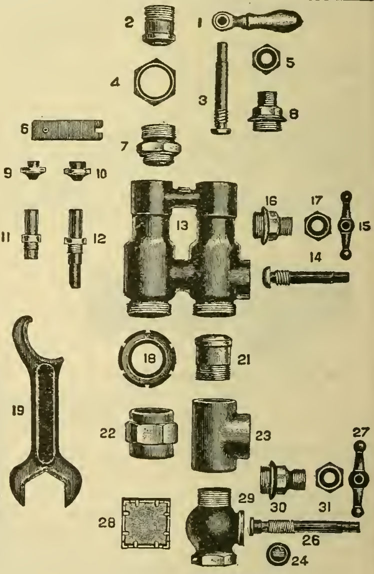


FIG. 413. STATIONARY INSPIRATOR.



PARTS OF INSPIRATOR.

HANCOCK STATIONARY INSPIRATOR.—FIG. 413.

NO.	7½	8¾	10	12½	15	17½	20	22½	25	30	35	40	45	50
CAPACITY GALS. PR. HR. 60 LBS. PRESS. 4 FT. L'F	60	90	120	220	300	420	540	720	900	1,260	1,740	2,230	2,820	3,480
MAXIMUM H. P.	6	8	15	30	40	60	75	90	120	165	230	300	375	500
SUCTION AND DISCHARGE	⅜	½	½	¾	¾	1	1	1¼	1¼	1½	1½	2	2	2½
STEAM	⅜	⅜	⅜	½	½	¾	¾	1	1	1¼	1¼	1½	1½	2
EACH	16.00	18.00	20.00	25.00	30.00	40.00	45.00	55.00	60.00	75.00	90.00	110.00	125.00	150.00

INJECTORS.

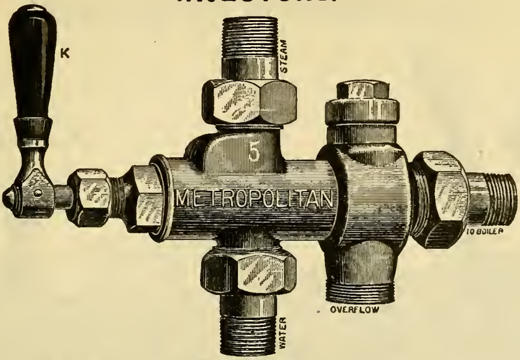


FIG. 415 METROPOLITAN INJECTOR SINGLE TUBE. DOUBLE TUBE NOT ILLUSTRATED

METROPOLITAN INJECTORS.—FIG. 415.

No.	Single Tube, Each.	Size of Pipe Connections.	Gallons per Hour, 65 lbs. Pressure.	Horse Power	No	Each	Size of Pipe Connections.	Gallons per Hour, 65 lbs. Pressure.	Horse Power
2	15.00	⅜	60	4 to 6	9	55.00	1¼	800	80 to 120
3	16.00	⅜	80	6 to 8	10	60.00	1¼	1000	100 to 130
3½	18.00	½	120	8 to 15	11	75.00	1½	1300	130 to 170
4	20.00	½	165	15 to 20	12	90.00	1½	1750	170 to 230
5	25.00	¾	250	20 to 30	13	110.00	2	2300	230 to 300
6	30.00	¾	350	30 to 45	14	125.00	2	2850	300 to 375
7	40.00	1	500	45 to 65	..	......	....	....	....
8	45.00	1	600	65 to 80	..	......	....	....	....

Double Tube Injectors same list price commencing at No. 4.

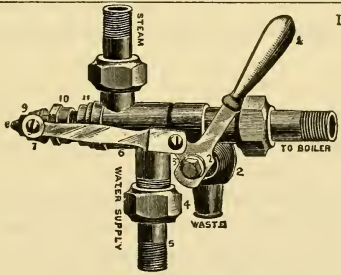


FIG. 416. EXCELSIOR INJECTOR.

EXCELSIOR INJECTORS.—FIG. 416.

No.	Size of Pipe Connections.		Horse Power.	Gallons per Hour, 60 lbs. Steam Pressure.	Each
	SUCTION AND FEED.	STEAM.			
1	⅜	⅜	2½ to 6½	60	16.00
2	⅜	⅜	6½ to 10	90	18.00
3	½	½	10 to 18	150	22.00
4	½	½	18 to 25	220	25.00
5	¾	¾	25 to 35	300	30.00
6	¾	¾	35 to 45	400	35.00
7	1	¾	45 to 60	500	40.00
8	1	¾	60 to 70	600	45.00
9	1¼	1	70 to 90	750	55.00
10	1¼	1	90 to 125	1,000	65.00
11	1½	1¼	125 to 150	1,300	75.00
12	1½	1¼	150 to 180	1,800	90.00

WALWORTH INJECTORS

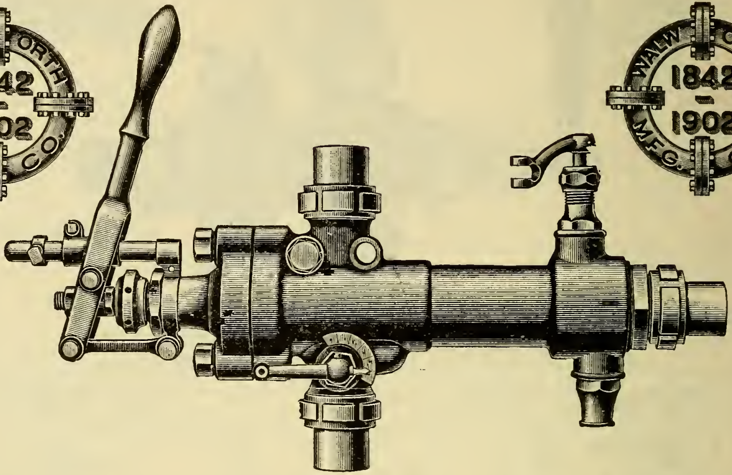


Fig. 416 A Improved Type "N. T." Locomotive Lifting Injector with Starting Lever

Interchanges with "Sellers" or Type B "Hancock"

Number, ...	4	5	6	7	8	9	10
Size of Connections, .	1	1½	1½	1½	2	2	2
* Capacity in gallons per hour,	600	1000	1250	1750	2175	2750	3400
Each, ...	$60.00	75.00	90.00	110.00	125.00	140.00	160.0

*These capacities are based on 125 lbs. steam pressure, and feed water at 7 Connections, unless otherwise ordered, will be sent blank to thread for iron pipe, braze for copper pipe of diameters given above.

The type N. T. injector embodies all our latest improvements, and is practica a one movement machine. It is started and stopped by one lever, and is prompt a reliable under all conditions of service.

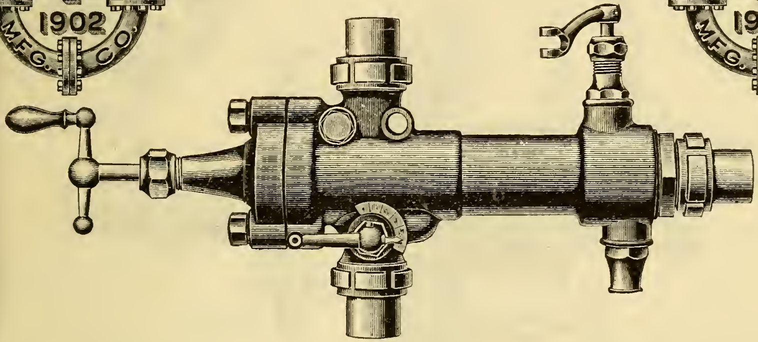
The injector should be placed when possible inside or partly inside the cab abo the water line in tender.

Instructions for Operating.

Open steam valve by starting lever a very short distance to lift the water; when water shows the overflow, continue to open steam valve until overflow runs dry. Do not increase steam supply af water ceases to overflow. The supply is regulated entirely by the Lazy cock.

For List Repair Parts See Page 202 E

WALWORTH INJECTORS



Improved Type "N. T." Locomotive Lifting Injector with Screw Starting Valve

Interchanges with "Sellers" or Type B "Hancock"

Number, ...	4	5	6	7	8	9	10
Size of connections, . .	1	1½	1½	1½	2	2	2
* Capacity in gallons per hour,	600	1000	1250	1750	2175	2750	3400
Each, ...	$60.00	75.00	90.00	110.00	125.00	140.00	160.00

* These capacities are based on 125 lbs. steam pressure, and feed water at 76°. onnections, unless otherwise ordered, will be sent blank to thread for iron pipe, or raze for copper pipe of diameters given above.

The type N.T. Injector with Screw Starting Stem is the same in internal construction s the machine illustrated on the opposite page.

The cone and tubes can be easily removed and cleaned if necessary, or renewed if ut by the action of gritty water.

The trouble resulting from sand or mineral deposits is reduced to a minimum in oth the types N.T. and National, there being but *one* water passage and that very large.

INSTRUCTIONS FOR OPERATING.

Open steam valve one quarter turn to lift the water; when water shows at overflow, continue to pen steam valve slowly until the overflow runs dry.

Do not increase steam supply after the water ceases to overflow. The supply is regulated entirely y the Lazy Cock.

FOR LIST REPAIR PARTS SEE PAGE 202 E.

WALWORTH INJECTORS

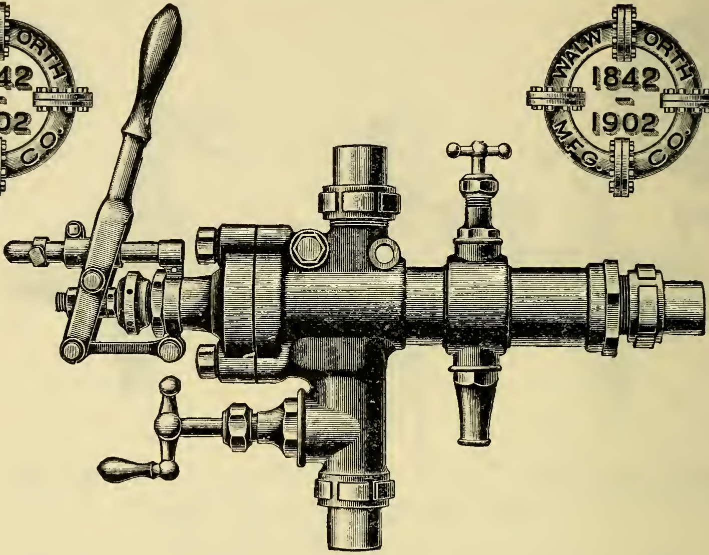


Fig. 416 B Improved Type "National" Locomotive Liftin
Injector with Starting Lever

Interchanges with "Monitor" or Type A "Hancock"

Number	4	5	6	7	8	9	10
Size suction and discharge,	¾	1¼	1¼	1½	2	2	2
Size steam connections, .	¾	1¼	1¼	1½	1½	1½	2
* Capacity in gallons per hour,	600	1000	1300	1800	2200	2800	3400
Each, ...	$60.00	75.00	90.00	110.00	125.00	140.00	160.00

* These capacities are based on 125 lbs. steam pressure, and feed water at 76 Connections, unless otherwise ordered, will be sent blank to thread for iron pipe, o braze for copper pipe of diameters given above.

The type National with starting lever possesses all the advantages of the type N.T. and is very compact in construction. Like the latter, its operation is very simple.

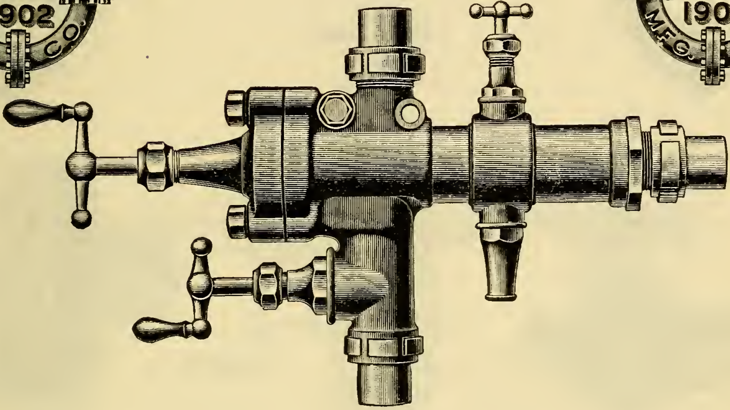
Our improved ram and spindle in both N.T. and National types enable the injecto to lift water promptly at all times, and even after doing duty as a heater.

INSTRUCTIONS FOR OPERATING.

Open steam valve by starting lever a very short distance to lift the water ; when water shows a the overflow, continue to open steam valve until the overflow runs dry. Do not increase steam suppl after water ceases to overflow. The supply is regulated entirely by water valve.

FOR LIST REPAIR PARTS SEE PAGE 202 F.

WALWORTH INJECTORS



mproved Type "National" Locomotive Lifting Injector with Screw Starting Valve

Interchanges with "Monitor" or Type A "Hancock"

Number	4	5	6	7	8	9	10
Size suction and discharge,	¾	1¼	1¼	1½	2	2	2
Size steam connections,	¾	1¼	1¼	1½	1½	1½	2
* Capacity in gallons per hour,	600	1000	1300	1800	2200	2800	3400
Each, ...	$60.00	75.00	90.00	110.00	125.00	140.00	160.00

* These capacities are based on 125 lbs. steam pressure, and feed water at 76°. onnections, unless otherwise ordered, will be sent blank to thread for iron pipe, or raze for copper pipe of diameters given above.

The type National with Screw Starting Valve is the same in internal construction as e machine illustrated on the opposite page.

It may be placed either inside or outside the locomotive cab and is equally suited for e right or left side of engine. When placed outside the cab the steam and water valves an be operated by rods running into cab.

INSTRUCTIONS FOR OPERATING.

Open steam valve one quarter turn to lift the water; when water shows at overflow, continue to en steam valve slowly until overflow runs dry. Do not increase steam supply after water ceases to erflow. The supply is regulated entirely by the water valve.

FOR LIST REPAIR PARTS SEE PAGE 202 F

WALWORTH INJECTORS

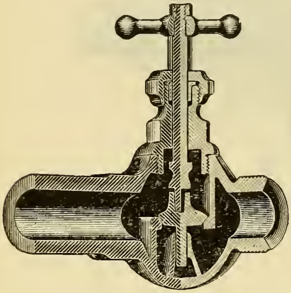


Fig. 416C.
Boiler Check Valve A

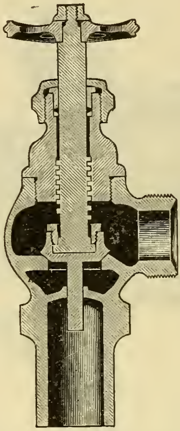


Fig. 416D.
Boiler Steam Valve

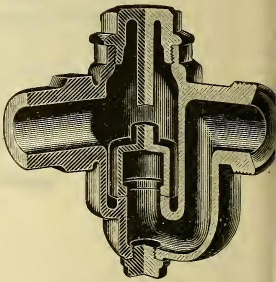


Fig. 416E.
Boiler Check Valve B

Boiler Check Valve A

SIZE	¾	1	1¼	1½	2
Fig. 416C	....	$8.00	$10.00	$12.00	$15.00
Fig. 416C, flanged . . .	....	10.00	12.00	15.00	20.00

Boiler Steam Valve

SIZE	¾	1	1¼	1½	2
Fig. 416D	....	$10.00	$12.00	$15.00	$18.00

Boiler Check Valve B

SIZE.	¾	1	1¼	1½	2
Fig. 416E	....	....	$10.00	$12.00	$15.00

WALWORTH INJECTORS

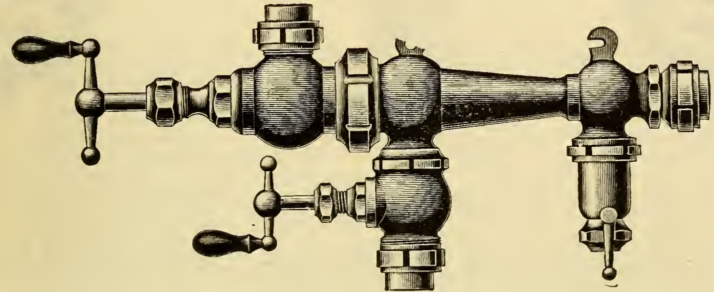


Fig. 416 F Type "A" Locomotive Lifting Injector

Interchanges with Type D "Hancock"

umber	4	5	6	7	8	9	10
ize of Connections, .	1	1¼	1¼	1½	1½	2	2
Capacity in gallons per hour,	600	1000	1250	1800	2200	2800	3400
ach, ...	$60.00	75.00	90.00	110.00	125.00	140.00	160.00

*These capacities are based on 125 lbs. steam pressure, and feed water at 76°. nnections, unless otherwise ordered, will be sent blank to thread for iron pipe, or aze for copper pipe of diameters given above.

The type "A" lifting injector has proven itself to be one of the most satisfactory chines of its class on the market.

For reliability, quick action, and range, it has no superior. This type is commonly ed when it is desired to have the injector outside the locomotive cab.

Instructions for Operating.

Open steam valve one quarter turn to lift the water; when water shows at overflow, continue to en steam valve until overflow runs dry. Do not increase steam supply after water ceases to overflow. e supply is regulated entirely by the water valve.

For List Repair Parts See Page 202G.

WALWORTH INJECTORS

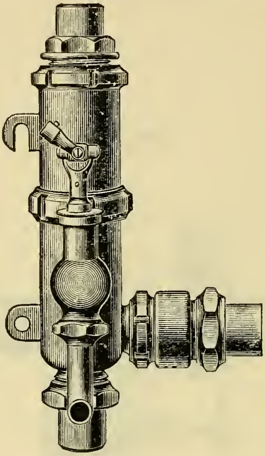


Fig. 416 H Type "E" Locomotive Non-Lifting Injector

Interchanges with "Freidman"

Number	4	5	6	7	8	9	10
Size Water Connections	1	1¼	1¼	1½	1½	2	2
Size Steam Connections	1	1¼	1¼	1½	1½	1½	2
*Capacity in gallons per hour	600	1000	1250	1800	2200	2800	3400
Each	$55.00	70.00	85.00	100.00	120.00	130.00	150.00

* These capacities are based on 125 lbs. steam pressure, and feed water at 76 Connections, unless otherwise ordered, will be sent blank to thread for iron pipe, o braze for copper pipe of diameters given above.

For a non-lifting injector the type "E" has no superior. We desire to call particula attention to its *very* satisfactory work under both high and low steam pressures, also it great range of delivery.

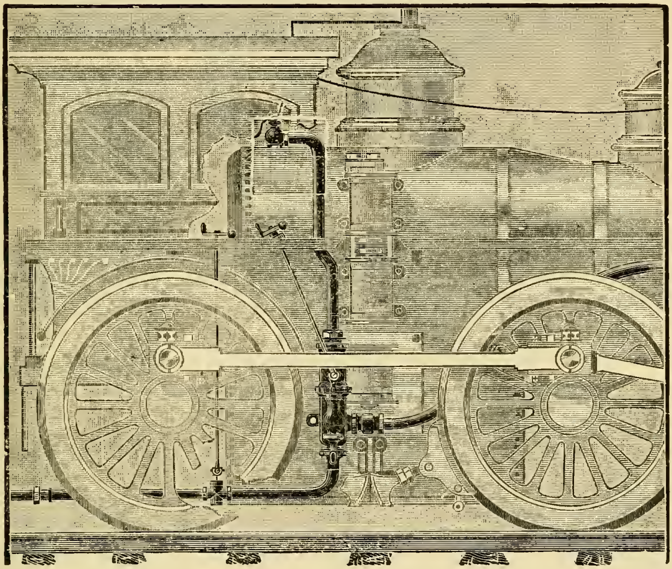
INSTRUCTIONS FOR OPERATING.

To start, first open Lazy cock; second, open steam valve (slowly at first), until overflow runs dry.

To stop, close steam valve and Lazy cock in order named. The supply is regulated entirely by th Lazy cock.

FOR LIST REPAIR PARTS SEE PAGE 202 H.

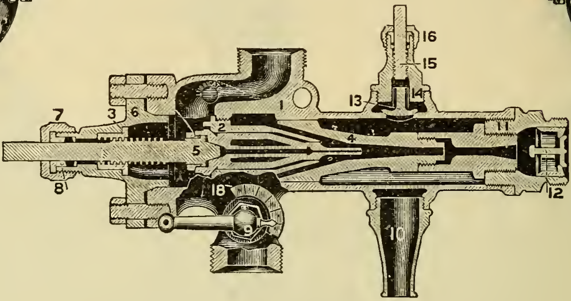
WALWORTH INJECTORS



The above cut shows the location and manner of connecting the Type "E" Non-Lifting Injector. It should be placed below the lowest water level in ender.

The overflow should be closed only when Injector is used as a heater. As dry steam is necessary to secure the best results with all types of injectors, he steam pipe should be attached to the dome.

WALWORTH INJECTORS



Sectional View of Type "N.T."

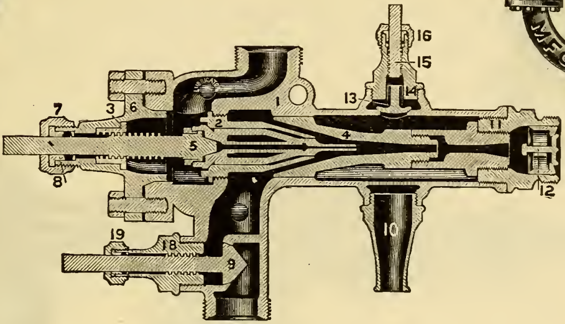
LIST OF REPAIR PARTS FOR TYPE "N.T."

1. Body
2. Cone
3. Stand Nut
4. Delivery Tube
5. Ram and Spindle
6. Stand
7. Stand Cap
8. Stand Gland
9. Water Supply Valve Complete
10. Overflow Nozzle
11. Delivery Tube Nut
12. End Check Valve
13. Overflow Valve
14. Overflow Stand
15. Overflow Spindle
16. Overflow Cap
18. Water Supply Valve Gauge

PRICE LIST.

	PARTS.	4	5	6	7	8	9	10
1.	Body	$10.00	$11.00	$12.00	$15.00	$22.00	$23.00	$24.00
2.	Cone	2.50	2.75	3.00	3.25	3.50	3.75	4.00
3.	Stand Nut	.45	.45	.45	.45	.50	.50	.50
4.	Delivery Tube complete	3.00	3.50	3.50	4.00	4.50	4.50	5.00
5.	Ram and Spindle	2.50	2.75	2.75	3.00	3.50	3.50	3.50
	Ram only	1.75	1.75	1.75	2.00	2.00	2.00	2.00
	Spindle only	.75	1.00	1.00	1.00	1.50	1.50	1.50
6.	Stand	4.00	4.25	4.50	4.50	4.75	5.00	5.00
7.	Stand Cap	.50	.55	.55	.55	.60	.60	.60
8.	Stand Gland	.25	.25	.25	.25	.25	.25	.25
9.	Water Supply Valve complete	2.00	2.00	2.00	2.00	2.50	2.50	2.50
10.	Overflow Nozzle	.45	.50	.55	.60	.70	.75	.80
11.	Delivery Tube Nut	1.50	1.75	2.00	2.50	3.00	3.50	3.50
12.	End Check Valve	.65	.65	.70	.75	.80	.90	1.00
13.	Overflow Valve	.15	.20	.20	.20	.25	.25	.25
14.	Overflow Stand	.50	.60	.65	.75	1.00	1.00	1.00
15.	Overflow Spindle	.25	.30	.30	.30	.40	.40	.40
16.	Overflow Cap	.10	.15	.15	.15	.20	.20	.20
18.	Water Supply Valve Gauge	.35	.35	.35	.35	.35	.35	.35
	Starting Lever complete	5.00	5.00	5.00	5.00	5.00	5.00	5.00

WALWORTH INJECTORS



Sectional View of Type "National"

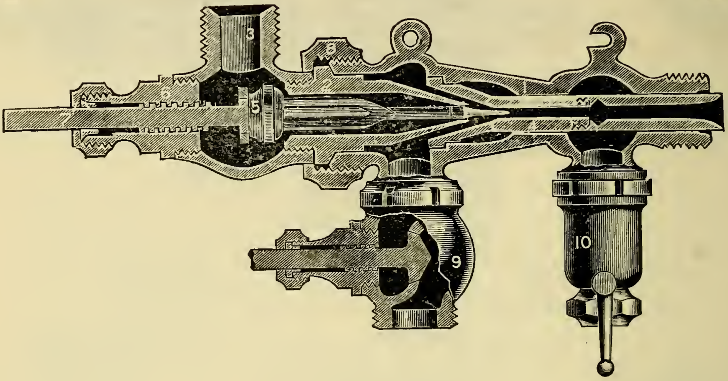
LIST OF REPAIR PARTS FOR TYPE "NATIONAL."

Body
Cone
Stand Nut
Delivery Tube
Ram and Spindle
Stand
7. Stand Cap
8. Stand Gland
9. Water Supply Spindle
10. Overflow Nozzle
11. Delivery Tube Nut
12. End Check Valve
13. Overflow Valve
14. Overflow Stand
15. Overflow Spindle
16. Overflow Cap
18. Stand of Water Supply Valve
19. Stand Cap Water Supply

PRICE LIST.

	PARTS.	4	5	6	7	8	9	10
1.	Body	$10.00	$11.00	$12.00	$15.00	$22.00	$23.00	$24.00
2.	Cone	2.50	2.75	3.00	3.25	3.50	3.75	4.00
3.	Stand Nut	.45	.45	.45	.45	.50	.50	.50
4.	Delivery Tube complete . .	3.00	3.50	3.50	4.00	4.50	4.50	5.00
5.	Ram and Spindle . . .	2.50	2.75	2.75	3.00	3.50	3.50	3.50
	Ram only	1.75	1.75	1.75	2.00	2.00	2.00	2.00
	Spindle only	.75	1.00	1.00	1.00	1.50	1.50	1.50
6.	Stand	4.00	4.25	4.50	4.50	4.75	5.00	5.00
7.	Stand Cap	.50	.55	.55	.55	.60	.60	.60
8.	Stand Gland	.25	.25	.25	.25	.25	.25	.25
9.	Water Supply Spindle . .	.35	.65	.65	.65	1.25	1.25	1.25
10.	Overflow Nozzle	.45	.50	.55	.60	.70	.75	.80
11.	Delivery Tube Nut . . .	1.50	1.75	2.00	2.50	3.00	3.50	3.50
12.	End Check Valve . . .	.65	.65	.70	.75	.80	.90	1.00
13.	Overflow Valve	.15	.20	.20	.20	.25	.25	.25
14.	Overflow Stand	.50	.60	.65	.75	1.00	1.00	1.00
15.	Overflow Spindle . . .	.25	.30	.30	.30	.40	.40	.40
16.	Overflow Cap	.10	.15	.15	.15	.20	.20	.20
18.	Stand of Water Supply Valve .	.75	1.00	1.00	1.25	1.75	1.75	1.75
19.	Stand Cap of Water Supply .	.15	.25	.25	.25	.35	.35	.35
	Starting Lever complete .	5.00	5.00	5.00	5.00	5.00	5.00	5.00

WALWORTH INJECTORS



Sectional View of Type "A"

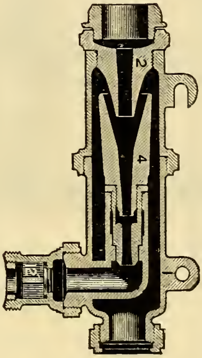
LIST REPAIR PARTS FOR TYPE "A"

1. Body
2. Cone
3. Steam Valve Body
4. Delivery Tube
5. Ram and Spindle
6. Stand
7. Stand Cap
8. Connecting Ring
9. Water Supply Valve, complete
10. Overflow Nozzle, complete

PRICE LIST

	PARTS.	4	5	6	7	8	9	10
1.	Body	$6.00	$8.00	$9.00	$9.00	$10.00	$12.00	$12.00
2.	Cone	2.00	2.50	3.00	3.75	4.00	4.50	5.00
3.	Steam Valve Body . .	2.00	2.25	2.50	3.50	3.50	3.75	4.00
4.	Delivery Tube	3.00	4.00	4.50	5.00	5 50	6.00	6.00
	Front Section only . .	1.25	1.50	1.75	2.00	2.00	2.50	2.50
	Back Section only . .	1.75	2.50	2.75	3.00	3.50	3.50	3.50
5.	Ram and Spindle	2.00	2.25	2.50	3.00	3.25	3.50	3.50
	Ram only	1.25	1.25	1.50	1.50	1.75	2.00	2.00
	Spindle only	.75	1.00	1.00	1.50	1.50	1.50	1.50
6.	Stand	1.00	1.50	1.50	2.00	2.00	2.50	2.50
7.	Stand Cap	.30	.40	.40	.60	.60	.60	.60
8.	Connecting Ring	1.00	1.25	1.25	2.25	2.25	2.50	2.50
9.	Water Supply Valve, complete	3.00	4.00	5.00	6.00	6.00	8.00	8.00
10.	Overflow Nozzle, complete .	4.00	4.50	5.00	5.50	5.50	6.00	6.50

WALWORTH INJECTORS



Sectional View of Type "E"

LIST REPAIR PARTS FOR TYPE "E"

1.	Body	4.	Delivery Tube
2.	Cone	12.	End Check Valve

PRICE LIST

Parts		5	6	7	8	9	10
1.	Body . . .	$9.50	$9.50	$11.00	$12.00	$17.00	$20.00
	Body Upper Section	6.00	6.00	7.00	8.00	10.00	12.00
	Body Lower Section	3.50	3.50	4.00	4.00	7.00	8.00
2.	Cone . . .	2.00	2.00	2.50	3.00	3.75	4.00
4.	Delivery Tube .	2.50	2.50	2.75	3.00	3.50	3.50
12.	End Check Valve	2.25	2.50	2.75	3.00	3.25	3.50

Price List of Rods and Joints

For Injectors	4	5	6	7	8	9	10
Rod with Joint and Handle	$2.50	3.00	3.00	3.00	3.50	4.00	4.00

WALWORTH INJECTORS

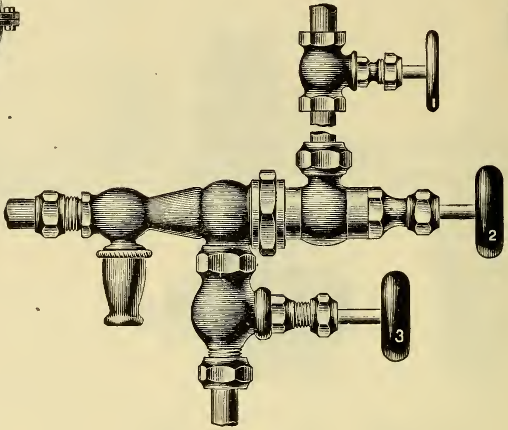


Fig. 416 J Walworth Stationary Lifting Injector

PRICE LIST.

SIZE NO.	1	2	3	4	5	6	7	8	9	10	1
Minimum inside diam. pipe connections, ...	⅜	½	¾	1	1¼	1¼	1½	1½	2	2	2
Delivery per hour in gallons at 50 lbs. steam pressure and above, ...	150	300	400	500	800	1200	1700	2100	2500	3000	35
Nom. H. P. at from 30 to 80 lbs., ...	20	40	50	70	100	150	225	275	325	400	47
Each, ...	$25.00	35.00	45.00	55.00	65.00	75.00	85.00	100.00	115.00	130.00	150.
Finished, Each, . .	$30.00	40.00	50.00	60.00	70.00	85.00	95.00	115.00	130.00	150.00	175.

This injector should be placed above the highest water level, and will draught water from five to twenty-five feet according to size and steam pressure.

In no case use a smaller pipe than indicated in table. Below 25 lbs. pressure the capacity is ¼ less.

In ordering injectors, give pressure of steam, and state if water is above or below the injector.

To attach injector connect the steam pipe to highest point on the boiler. Before connecting the pipes at the injector blow steam through them to clear them of foreign matter. Have steam pipes as short as possible. Place a globe valve in steam pipe, a check valve in delivery pipe.

To start injector see that valve No. 2 is closed and No. 3 is open. Open valve No. 1 wide. As soon as water appears at overflow open valve No. 2 until it ceases to run.

To stop injector close valves No. 1 and No. 2 in order named.

WALWORTH INJECTORS

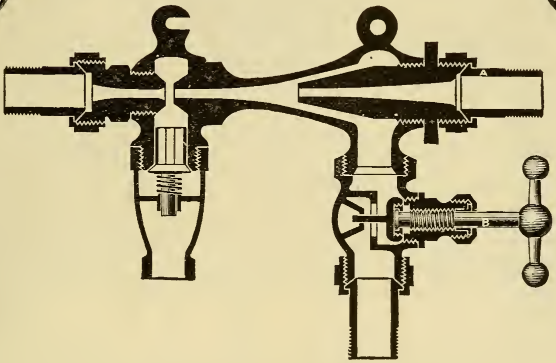


Fig. 416 K Walworth Stationary Non-Lifting Injector

PRICE LIST

SIZE NO.	1	2	3	4	5	6	7	8	9	10	12
Minimum inside diam. pipe connection, ...	3/8	1/2	3/4	1	1 1/4	1 1/4	1 1/2	1 1/2	2	2	2 1/2
Delivery per hour in gals. at 50 lbs. steam pressure and above, ...	150	300	400	500	800	1200	1700	2100	2500	3000	3500
Nom. H. P. at from 30 to 80 lbs., ...	20	40	50	70	100	150	225	275	325	400	475
Each, ...	$15.00	20.00	30.00	40.00	50.00	60.00	70.00	85.00	100.00	115.00	130.00

This injector is used where there is a head of water from tank reservoir or main and should invariably be placed *below the lowest water level.*

In no case use a smaller pipe than indicated in table. Below 25 lbs. pressure the capacity is 1/4 less. In ordering injectors give pressure of steam and state if water is above or below the injector.

To attach Injector: Follow same instructions as for lifting injector, illustrated on page 18.

To start Injector: Open steam valve on line A to clear pipe of condensation and close. Open water valve B. As soon as water appears at overflow open steam valve until it ceases to run. At low pressure steam or high pressure of water it may be necessary to close in on water valve.

To stop Injector: Close steam valve and water valve in order named.

DODGE AUTOMATIC INJECTORS

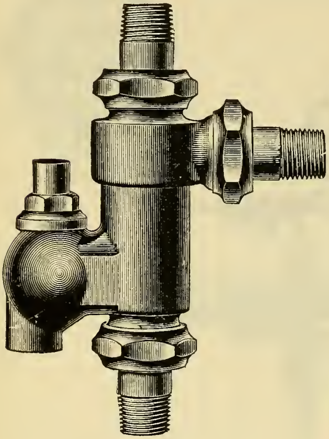


Fig. 416 M Dodge Automatic Injector.

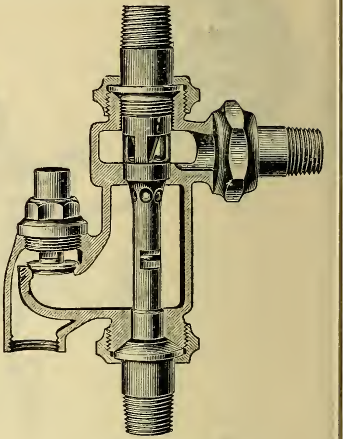


Fig. 416 M Sectional View.

DIRECTIONS FOR USE.

Attach the injector in an upright position, overflow pointing downward. Globe valves should be placed on both the water supply and steam pipes, and a check valve on the delivery pipe. Place all valves close to the injector and use *only* such size connecting pipes as called for by couplings. *To start*, open steam valve, then open valve in supply pipe. If water appears at overflow close and open quickly the valve in supply pipe opening only about one quarter turn if at low steam, and wide open if at high steam. *Or* to start and operate above 70 lbs. pressure open water valve wide and operate by steam valve.

The maximum and minimum of water is controlled by the water valve.

Have the supply pipe *tight* and use a strainer.

To remove interior parts unscrew at steam end without disconnecting feeder at boiler.

Interior parts can be duplicated at slight expense.

In replacing center piece have clean *shoulder* in *casing* and screw parts down to a *seat*.

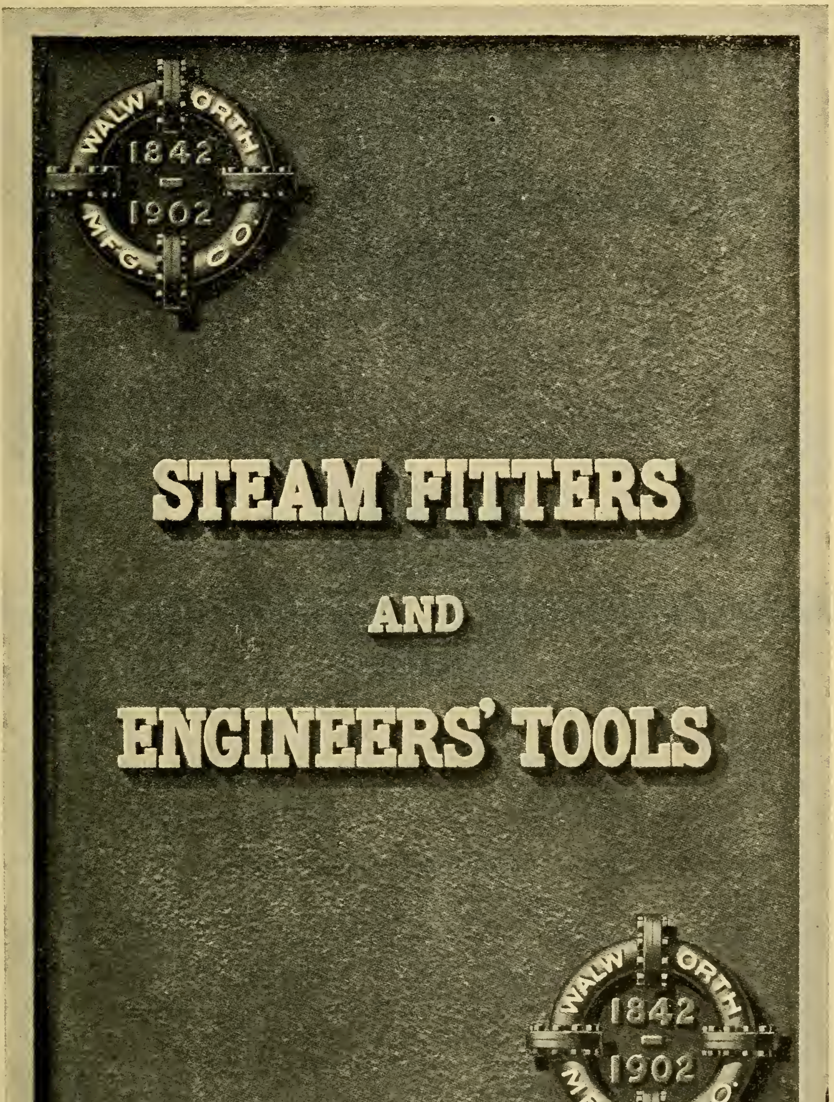
For a high lift or long draw increase the size of suction pipe and be sure connections are air tight.

Blow out pipes before connecting injector.

PRICE LIST.

No. of Injector.	Steam and Delivery.	Water.	Gallons per Hour.	Horse Power.	Price of Injector.
00	⅜	½	65	4 to 8	$16.00
0	⅜	½	110	8 to 12	18.00
1	½	¾	120	10 to 15	20.00
2	½	¾	220	15 to 25	25.00
3	¾	1	300	25 to 35	30.00
4	¾	1	420	35 to 50	40.00
5	1	1¼	540	45 to 60	45.00
6	1	1¼	720	60 to 95	55.00
7	1¼	1½	900	85 to 120	60.00
8	1¼	1½	1260	120 to 165	75.00
9	1½	2	1740	165 to 230	90.00
10	1½	2	2230	230 to 295	110.00
11	2	2	2820	295 to 375	125.00
12	2	2	3480	375 to 460	150.00

The capacity of these injectors is estimated for a 4 foot lift and 80 lbs. steam pressure. With a greater lift the capacity will be correspondingly reduced. Every injector is thoroughly tested and recorded at factory, and is guaranteed to be perfect in operation and of full tabulated capacity.



WALWORTH
1842
–
1902
MFG. CO.

STEAM FITTERS
AND
ENGINEERS' TOOLS

WALWORTH
1842
–
1902
MFG. CO.

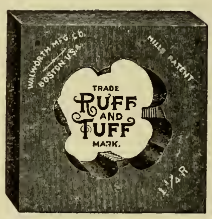


FIG. 417. RUFF AND TUFF DIES.
SEE LIST ON OPPOSITE PAGE.

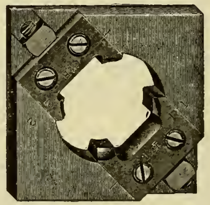


FIG. 417 A. HALL'S ADJUSTABLE DIES.

HALL'S ADJUSTABLE DIES.—FIG. 417 A.

FOR PLATES NO.	0	1	1½	1¾	2	3	4
SIZE SQUARE	2 x ½	2½ x ¾	3 x ¾	3 x ¾	4 x ⅞	5 x 1¼	5 x 1¼
EACH	1.50	2.00	2.50	2.50	3.50	9.00	9.00

The advantage of the Hall Adjustable Die will be at once apparent, combining as it does the merits of both the adjustable and solid die.

TOOLS.

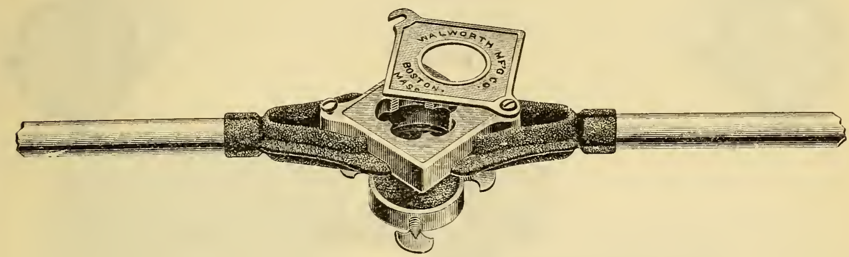


FIG. 418. WALWORTH DIE PLATE, NO. 2.

Walworth Mfg. Co.

Sole Manufacturers

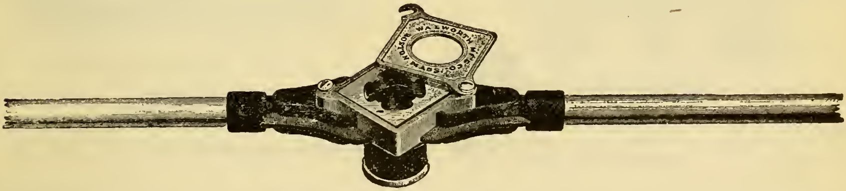


FIG. 419. WALWORTH DIE PLATE, NOS. 0 TO 1¾.

WALWORTH DIE PLATES.—FIGS. 418 AND 419.

NO.	00 Brass Pipe.	0	1	1½	1¾	2	3 2 arm.	4 4 arm.
THREADS	⅝,¾,⅞,1,1¼	⅛ to ½	¼ to 1	¾ to 1¼	1 to 1½	1¼ to 2	2½ and 3	2½ and 3
SIZE DIES	2 x ½	2 x ½	2½ x ¾	3 x ¾	3 x ¾	4 x ⅞	5 x 1¼	5 x 1¼
DIE PLATES ONLY	3.50	3.50	5.00	6.00	6.00	9.50	25.00	33.00
DIE PLATES COMPLETE, WITH HILL'S DIES	13.50	9.50	15.00	13.50	13.50	20.00	43.00	51.00
DIE PLATES COMPLETE WITH "RUFF & TUFF" DIES	16.75	11.50	18.25	16.00	16.00	23.50	49.00	57.00
EXTRA HILL'S DIES	2.00	1.50	2.00	2.50	2.50	3.50	9.00	9.00
EXTRA "RUFF & TUFF" DIES	....	2.00	2.75	3.35	3.35	4.75	12.00	12.00
EXTRA BUSHINGS	25	.25	35	.45	45	60	1.00	1.00
EXTRA DIE FRAMES	....	....	30	40	.40	.50	.60	.60
HILL'S DIES FOR PLUMBERS' BRASS PIPE	....	2 00	2.50	3.00	3.00	4.00	....	....

No. 2 and larger have leader screw.

For list on repairs, see page 208.

TOOLS.

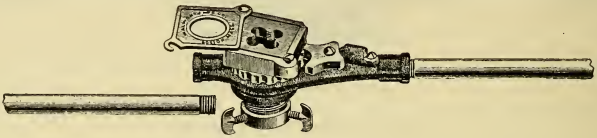


FIG. 420. MILLER'S REVERSIBLE RATCHET DIE PLATE. NOS. C, D, AND E.

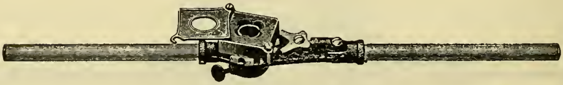


FIG. MILLER'S REVERSIBLE RATCHET DIE PLATE. NOS. A AND B.

MILLER'S REVERSIBLE RATCHET DIE PLATES.—FIGS. 420 AND 421.

NO.	A	B	C	D	E
THREADS	⅛ to ¾	¼ to 1	1 to 1½	1¼ to 2	2½ to 3
SIZE DIES	2 x ½	2½ x ¾	3 x ¾	4 x ⅞	5 x 1¼
DIE PLATES ONLY. { Without Dies or Bushings	7.50	7.50	13.00	12.50	29.00
DIE PLATES COMPLETE WITH HILL'S DIES	14.50	15.00	18.50	20.00	44.50
DIE PLATES COMPLETE WITH "RUFF AND TUFF" DIES	17.00	17.50	20.25	22.00	49.50
EXTRA HILL'S DIES	1.40	1.50	1.80	2.50	7.75
EXTRA "RUFF AND TUFF" DIES	1.90	2.00	2.40	3.10	10.25
EXTRA BUSHINGS	.25	.25	.35	.45	.85
EXTRA DIE FRAMES	....	.22	.30	.38	.45
SPACE REQUIRED AROUND PIPE TO THREAD	2½″	3″	3½″	4″	5″

For List on Repairs see page 208.

TOOLS.

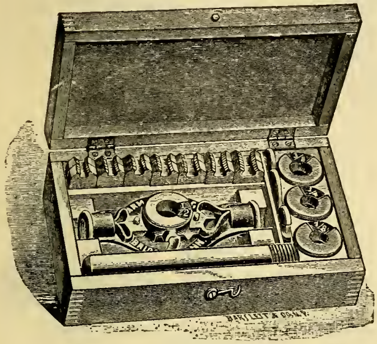


FIG. 422 STOCK AND DIES, NO. 1.

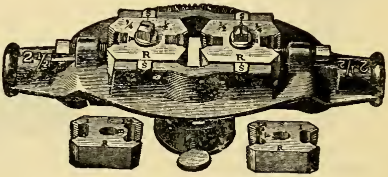


FIG. 423. STOCK AND DIES. NO. 2½.

ADJUSTABLE STOCK AND DIES.—FIGS. 422 AND 423.

No.	Threads.	Complete.	Stock Only.	Extra Dies.	Extra Bushings.	Extra Wrenches.
No. 1, 4 Dies, Single End, R. H.	⅛ to ½	9.00	3.25	1.25	.20	.25
No. 1, 4 Dies, Single End, Each, R.& L.	⅛ to ½	14.00	3.25	1.25	.20	.25
No. 2, 5 Dies, Single End, R. H.	¼ to 1	12.00	4.00	1.50	.25	.25
No. 2, 5 Dies, Single End, Each, R.& L.	¼ to 1	20.00	4.00	1.50	.25	.25
No. 2½, 4 Dies, Double End, R. H.	½ to 1¼	12.00	4.50	3.25	.40	.25
No. 2½, 4 Dies, Double End, Each, R.& L.	½ to 1¼	18.00	4.50	3.25	.40	.25
No. 3, 3 Dies, Single End, R. H.	1¼ to 2	20.00	7.00	4.00	.50	.50
No. 3, 3 Dies, Single End, Each, R.& L.	1¼ to 2	32.00	7.00	4.00	.50	.50
No. 4, 3 Square Dies, R. H.	1¼ to 2	18.00	7.00	3.00	.50	...
No. 4, 3 Square Dies, Each, R.& L.	1¼ to 2	27.00	7.00	3.00	.50	...
No. 6, 2 Dies, Double End	2½ and 3	40.00	25.00	15.00	1.00	.50
No. 6, 2 Dies, Double End, Each, R.& L.	2½ and 3	55.00	25.00	15.00	1.00	.50
No. 7, 8 Dies, Double End	2½ to 4	60.00	30.00	16.00	1.50	.75
No. 7, 8 Dies, Double End, Each, R.& L.	2½ to 4	92.00	30.00	16.00	1.50	.75

Prices for Dies mean per set of 2 Pieces.

NOTE: — No. 4 Stock is a sectional stock.

Nos. 2½, 6, and 7 Stocks are fitted with double-ended dies.

Nos. 1 and 2 Stocks are packed in cases, as shown by Fig. 422.

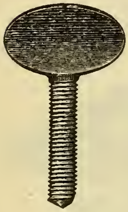
Nos. 6 and 7 have four arms.

REPAIRS FOR DIE PLATES.

WALWORTH DIE PLATES.

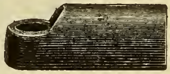
NO.	0	1	1½	1¾	2	3	4
MALLEABLE BODY ONLY	2.00	2.40	3.00	3.00	4.00	10.00	13.50
LEADER SCREWS WITH THUMB SCREWS . . . . EACH	....	....	....	2.00	2.50	7.00	7.00
HANDLES . . . . PER SET	1.90	2.25	2.75	2.75	3.50	10.00	20.00
BRASS FACE PLATES . . . . EACH	.75	.90	1.35	1.35	2.25	3.50	3.50
THUMB SCREWS FOR FACE PLATES OR BUSHINGS . . . . EACH	.20	.30	.30	.30	.30	.40	.40

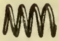
REPAIRS FOR MILLER'S REVERSIBLE RATCHET DIE PLATES.


LARGE THUMB SCREW.

SMALL THUMB SCREW.

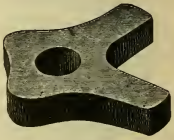
SOCKET SCREW.


SOCKET.


SOCKET SPRING.

SOCKET PIN.

PAWL SCREW.


PAWL.

NO.	A	B	C	D	E
LARGE THUMB SCREW	.34	.34	.34	.32	.32
SMALL THUMB SCREW	.20	.20	.27	....	....
SOCKET SCREW	.20	.20	.20	.18	.18
SOCKET	.22	.24	.25	.27	.29
MALLEABLE RING	.65	.65	.70	1.00	1.10
SOCKET SPRING	....	....	....	....	....
SOCKET PIN	.15	.15	.15	.20	.20
SOCKET BRASS PIN	.08	.08	.08	.12	.12
PAWL BOLT WITH NUT	.40	.40	.40	.36	.85
PAWL	.27	.27	.40	.40	.50
LEADER SCREWS WITHOUT THUMB SCREWS (SET OF 3).	....	....	1.14	1.00	5.00
THUMB SCREWS FOR LEADER SCREW . . . . PER SET (3)	....	....	.40	.80	1.60
BRASS FACE PLATES	.35	.56	.84	1.10	1.60
HANDLES . . . . PER PAIR	1.50	1.75	2.00	2.50	5.00
MALLEABLE HANDLE PIECE	1.40	1.50	2.10	2.25	3.40
DIE HOLDER OR RATCHET PART	1.85	2.00	2.55	2.50	4.00
TWO MACHINE SCREWS FOR FACE PLATE	.06	.06	.08	.08	.14

REPAIRS FOR ARMSTRONG PLATES.

NO.	1	2	2½	3	4	6	7
WRENCHES . . . . EACH	.25	.25	.25	.50	....	.50	.75
COLLAR SCREWS . . . . EACH	.12	.12	.15	.15	....	.25	.25
ADJUSTING SCREWS . . . . EACH	.10	.10	.15	.15	....	.20	.20
THUMB SCREWS . . . . EACH	.10	.10	.10	.15	.15	....	....

TOOLS.

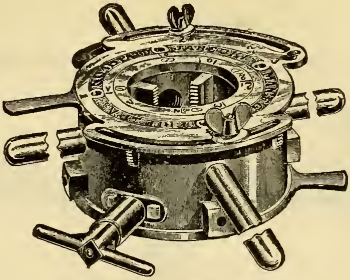


FIG. 424. JARECKI SCREW PLATE.

JARECKI SCREW PLATES.—FIG. 424.

NO.	1	2	3	3½	4*a*	4*b*	5	5*a*
CUTS AND THREADS	¼ to ¾	½ to 1¼	1 to 2	1½ to 2	1½ to 3	2½ to 4	4½ to 6	6 to 8
EACH	14.00	16.00	20.00	22.50	35.00	50.00	75.00	125.00
EXTRA DIES PER SET	2.00	2.00	2.00	2 Sets. 4.00	3.00	3.00	6.00	6.00
EXTRA KNIVES EACH	.40	.40	.40	.40	.50	.50	.60	.60

Nos. 4*a* and 4*b* have four handles. Nos. 5 and 5½ have five handles.

FIG. 425. SOLID STOCK AND DIES

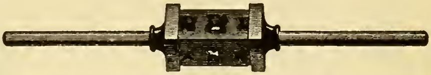


FIG. 426. DEAN STOCK AND DIES.

SOLID STOCK AND DIES.—FIG. 425.

Threads, ⅛, ¼, ⅜, and ½ inch	Each	$7.00
Extra Die Plates	Each	5.00

DEAN STOCK AND DIES.—FIG. 426.

Threads, ⅛, ¼, ⅜, ½, ¾, and 1 inch	Each	$10.00
Extra Die Plates, ⅛ to ⅜	Each	3.50
Extra Die Plates, ½ to 1	Each	4.00

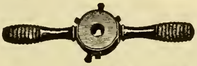


FIG. 427. GLEASON'S SCREWING STOCK.

GLEASON'S SCREWING STOCKS FOR BRASS PIPE.—FIG. 427.

Threads, ⅜, ½, ⅝, ¾, and ⅞ inch.... ....Each $8.00.

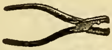


FIG. 428. BURNER PLYER.

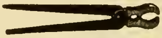


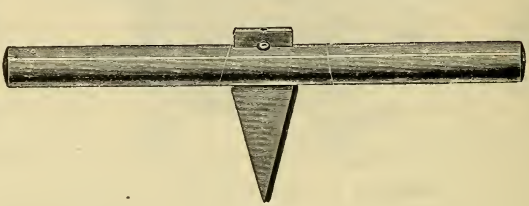
FIG. 429 GAS PLYER.

BURNER AND GAS PLYERS.—FIGS. 428 AND 429.

SIZE	5	6	7	8	9	10	11	12	13	14
ONE-HOLE BURNER EACH	.67	.75	.	....	...	....	....	....	....	....
TWO-HOLE BURNER EACH	....	....	.83	....	....	....	...	....	...	....
GAS PLYERS EACH	....	....	....	1.00	1.16	1.25	1.37	1.50	1.75	2.00

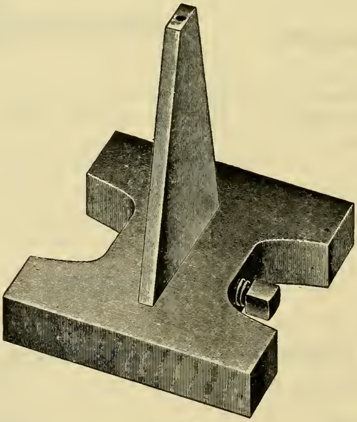
THE HALL PATENT PIPE REAMERS.

FOR REMOVING THE BURRS FROM ENDS OF PIPES.



STYLE A.
FIG B HALL PATENT PIPE REAMER WITH HANDLE

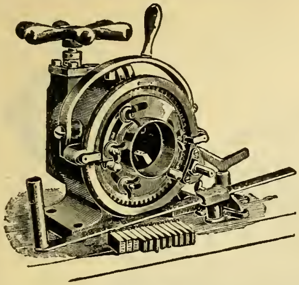
No. 1.	Style A.	Reams ⅛ to 1″ Pipe	Each	$ .80
No. 2.	Style A.	Reams ¾ to 2″ Pipe	Each	.90
No. 3.	Style A.	Reams 1½ to 3″ Pipe	Each	2.50



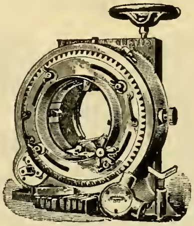
STYLE B.
FIG. 429C. FOR USE IN DIE PLATE.

No. 0	Style B	Block 2″ square	Reams ⅛ to ¾″	Each	$ 65
No. 1.	Style B	Block 2½″ square	Reams ⅛ to 1″	Each	65
No 1½.	Style B.	Block 2½″ square.	Reams ¾ to 1½″	Each	.80
No. 2.	Style B.	Block 4″ square.	Reams ¾ to 2″	Each	1.00

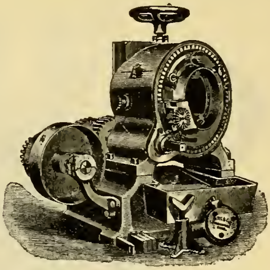
TOOLS.



NO. 30.
FIG. 429D. CURTIS HAND MACHINE.
RANGE ¼ TO 2 IN., R AND L.



NO. 56.
FIG. 429E. CURTIS HAND MACHINE.
RANGE 2½ TO 6 IN., R. H.



NO. 76.
FIG. 429F. CURTIS HAND OR POWER MACHINE.
RANGE 2½ TO 4 IN., R. H.

NET PRICE LIST FOR CURTIS HAND MACHINES.—FIGS. 429D AND 429E.

NUMBER	RANGE.	WEIGHT, NET.	WEIGHT, GROSS.	PRICE.
*30	¼ to 2 inch, both Right and Left	138 lbs.	178 lbs.	$50.00
*32	¼ to 2 inch, for Solid Dies (without dies)	130 lbs.	170 lbs.	45.00
*34	1 to 3 inch, R. H., 1 to 2 inch, L. H.	155 lbs.	195 lbs.	75.00
*36	¾ to 3 inch, R. H., ¾ to 2 inch, L. H.	160 lbs.	200 lbs.	85.00
*37	¼ to 3 inches, R. and L.	160 lbs.	200 lbs.	105.00
†46	2½ to 4 inches, R. H.	220 lbs.	270 lbs.	85.00
*38	1¼ to 4 inches, R. H	222 lbs.	272 lbs.	100.00
*40	1¼ to 4 inches, R. and L.	225 lbs.	275 lbs.	115.00
*42	1 to 4 inches, R. H.	223 lbs.	273 lbs.	110.00
*44	1 to 4 inches, R. and L.	235 lbs.	285 lbs.	130.00
†50	4 to 6 inches, R. H.	298 lbs.	376 lbs.	115.00
†52	3½ to 6 inches, R. H.	298 lbs.	376 lbs.	130.00
†54	2½ to 5 inches, R. H.	300 lbs.	378 lbs.	150.00
†56	2½ to 6 inches, R. H.	303 lbs.	381 lbs.	175.00
†62	2½ to 6 inches, R. H. (extra heavy)	750 lbs.	885 lbs.	300.00
*58	1 to 6 inches, R. H.	330 lbs.	408 lbs.	190.00
*60	1 to 6 inches, R. and L.	348 lbs.	426 lbs.	235.00
*63	2½ to 8 inches, R. and L.	625 lbs.	750 lbs.	360.00
†64	2½ to 8 inches, R. H.	600 lbs.	725 lbs.	325.00
†66	2½ to 10 inches, R. H.	750 lbs.	880 lbs.	500.00
*67	2½ to 10 inches, R. H.	760 lbs.	890 lbs.	500.00
*68	2½ to 10 inches, R. and L.	800 lbs.	950 lbs.	550.00
†69	2½ to 12 inches, R. H.	1,000 lbs.	1,200 lbs.	650.00
*69½	2½ to 12 inches, R. and L	1,050 lbs.	1,250 lbs.	750.00

* Pressure feed machine. Nos. 30 to 37 have no cut-off attachment unless especially ordered. † Lead screw machine.

NET PRICE LIST FOR CURTIS HAND OR POWER MACHINES.—FIG. 429F.

NUMBER.	RANGE.	WEIGHT, NET.	WEIGHT, GROSS.	PRICE.
*70	¼ to 2 inch, R. and L.	320 lbs.	430 lbs.	$100.00
*72	¼ to 2 inch for Solid Dies (without Dies)	315 lbs.	425 lbs.	95.00
*74	1 to 3 inch, R. H., 1 to 2 inch, L. H.	340 lbs.	450 lbs.	125.00
*76	¾ to 3 inch, R. H., ¾ to 2 inch, L. H.	343 lbs.	462 lbs.	135.00
*77	¼ to 3 inches, R. and L.	348 lbs.	467 lbs.	155.00
†78	2½ to 4 inches, R. H.	515 lbs.	652 lbs.	140.00
*80	1¼ to 4 inches, R. H.	516 lbs.	653 lbs.	150.00
*82	1¼ to 4 inches, R. and L.	517 lbs.	654 lbs.	165.00
*84	1 to 4 inches, R. H.	516 lbs.	653 lbs.	160.00
*86	1 to 4 inches, R. and L.	527 lbs.	664 lbs.	180.00
†88	4 to 6 inches, R. H.	635 lbs.	813 lbs.	170.00
†90	3½ to 6 inches, R. H.	640 lbs.	818 lbs.	180.00
†92	2½ to 5 inches, R. H	640 lbs.	818 lbs.	200.00
†94	2½ to 6 inches, R. H.	645 lbs.	823 lbs.	225.00
*96	1 to 6 inches, R. H.	665 lbs.	843 lbs.	250.00
*98	1 to 6 inches, R. and L.	675 lbs.	853 lbs.	285.00
*99	2½ to 8 inches, R. and L.	1,130 lbs.	1,215 lbs.	535.00
†100	2½ to 8 inches, R. H.	1,108 lbs.	1,193 lbs.	500.00
†102	2½ to 10 inches, R. H.	1,510 lbs.	1,600 lbs.	700.00
*104	2½ to 10 inches, R. H	1,520 lbs.	1,600 lbs.	700.00
*106	2½ to 10 inches, R. and L.	1,560 lbs.	1,650 lbs.	750.00
†107	2½ to 12 inches, R. H.	2,500 lbs.	2,700 lbs.	900.00
*108.	2½ to 12 inches, R. and L	2,550 lbs.	2,750 lbs.	1,000.00

* Pressure feed machine.
† Lead screw machine.

These prices include counter-shaft, ratchet wrench, and pipe rest.
Nos. 70 to 77 have no cut-off attachment unless especially ordered.

TOOLS.

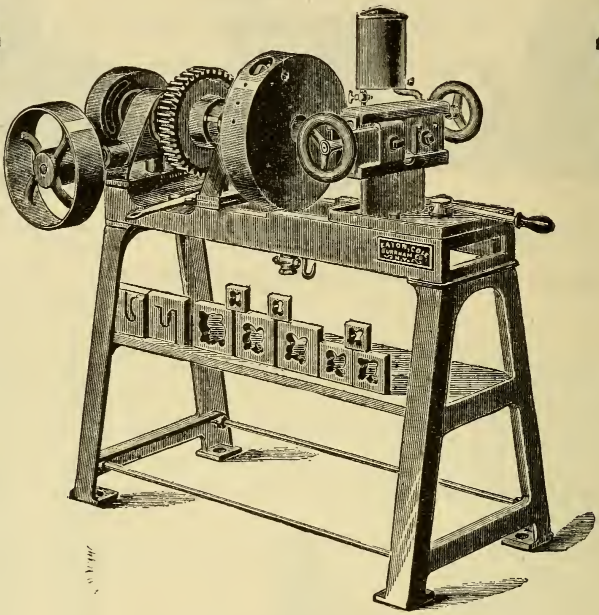


FIG. 429 F. NO. 1 MACHINE, ¼" TO 2", FOR POWER.

PIPE THREADING MACHINES.—FIGS. 429 D, 429 E, AND 429 F.

FIG. 429 D,	Threads 6 to 12 inch Pipe, complete with Counter-Shaft	$2,000.00
FIG. 429 D,	Threads 6 to 12 inch Pipe, complete with Engine attachment	$2,000.00
Fig. 429 D has Expanding Dies, Adjustable Die-Head, no unattached gears, power feed; Weight, 9,000 lbs. Speed of counter-shaft, 227 revolutions per minute.		
FIG. 429 E,	No. 3, Threads 1 to 6 inch pipe, complete with Counter-Shaft	$800.00
FIG. 429 E,	No. 3, Threads 1 to 6 inch pipe, complete with Engine attachment	$800.00
FIG. 429 E,	No. 4, Threads 2½ to 8 inch pipe, complete with Counter-Shaft	$900.00
FIG. 429 E,	No. 4, Threads 2½ to 8 inch pipe, complete with Engine attachment	$900.00
Fig. 429 E has expanding Dies, Adjustable Die-Head, no unattached gears; Weight of No. 3 machine, 4,000 lbs.; weight of No. 4 machine, 4,500 lbs. Speed of Counter-Shaft, No. 3 machine, 250 revolutions; No. 4 machine, 250 revolutions.		
FIG. 429 F,	No. 1, for hand-power, threads ¼ to 2 inch pipe, complete	$90.00
FIG. 429 F,	No. 1, for power, threads ¼ to 2 inch pipe, with Counter-Shaft, complete	$110.00
Fig. 429 F has three changes of speed, solid Dies, Concentric Chuck for holding pipe, etc. Weight of hand machine, 460 lbs.; power machine, 660 lbs. Speed of Counter-Shaft for power machine, 225 revolutions. Price of power machine includes heavy Hand Wheel.		

TOOLS.

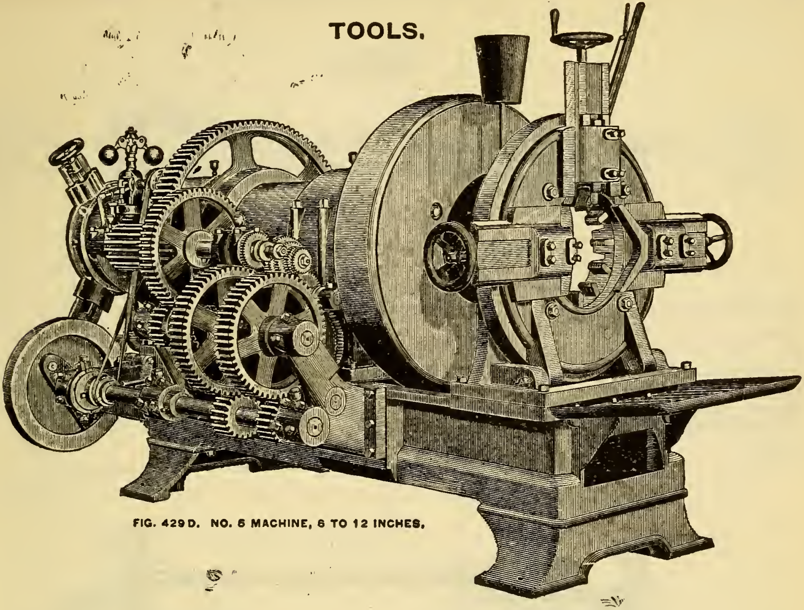


FIG. 429 D. NO. 5 MACHINE, 6 TO 12 INCHES.

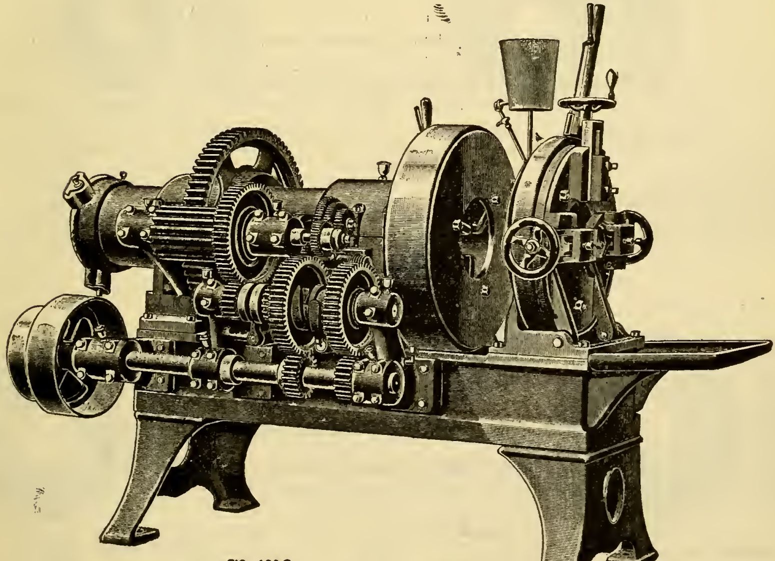


FIG. 429 E.

NO. 3 MACHINE, 1 TO 8 INCHES. NO. 4 MACHINE, 2½ TO 8 INCHES.

FOR DESCRIPTION AND PRICE, SEE OPPOSITE PAGE.

TOOLS.

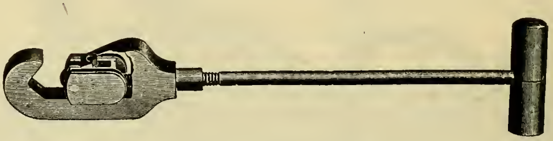


FIG. 430. STANWOOD CUTTER.

STANWOOD IMPROVED PIPE CUTTERS.—FIG. 430.

NO.	1	2	3
CUTS PIPE	⅛ to 1	¾ to 2	2 to 3
EACH	1.50	2.75	7.00
EXTRA BLOCKS AND WHEELS.........EACH	.40	.65	1.25
EXTRA WHEELS.........EACH	.12	.18	.25
PINS.........EACH	.05	.05	.08

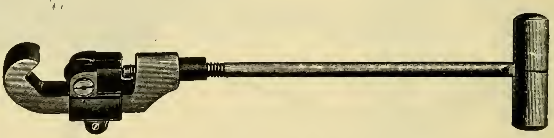


FIG. 431. WALWORTH'S IMPROVED CUTTER.

C. C. WALWORTH'S IMPROVED PIPE CUTTERS.—FIG. 431.

NO.	1	2	3
CUTS PIPE	⅛ to 1	¾ to 2	2 to 3
EACH	1.65	2.40	6.50
EXTRA BLOCKS AND WHEELS.........EACH	.67	.90	1.55
EXTRA WHEELS.........EACH	.12	.18	.25

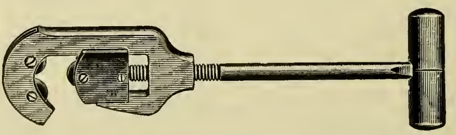


FIG. 432 A STANWOOD THREE WHEEL CUTTER.

STANWOOD IMPROVED THREE WHEEL PIPE CUTTERS.—FIG. 432 A.

NO.	1	2	3
CUTS PIPE	⅛ to 1	½ to 2	1¼ to 3
EACH	4.50	7.50	16.00
EXTRA WHEELS.........EACH	.25	.30	.40
EXTRA BLOCKS.........EACH	.90	1.50	2.50

TOOLS.

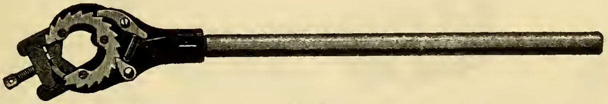


FIG. 433. MILLER'S REVERSIBLE RATCHET PIPE CUTTER.

MILLER'S REVERSIBLE RATCHET PIPE CUTTERS.—FIG. 433.

NO.	0	1	1½	2	3
CUTS PIPE	⅛ to ¾	½ to 1	1 to 1½	1¼ to 2	2½ to 3
EACH	6.75	8.50	10.00	11.00	16.00
EXTRA WHEELS	.12	.18	.18	.25	.40

WHEELS FOR NOS. 1 AND 2 STANWOOD AND WALWORTH CUTTERS.

FULL SIZE.

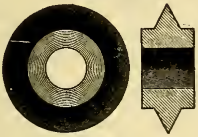


FIG. 434. NO. 1 STANWOOD WHEEL.

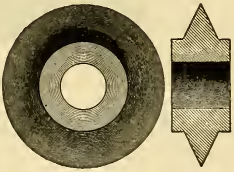


FIG. 435. NO. 2 STANWOOD WHEEL.

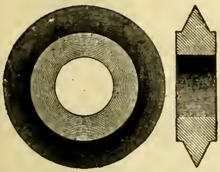


FIG. 437. NO. 1 WALWORTH WHEEL.

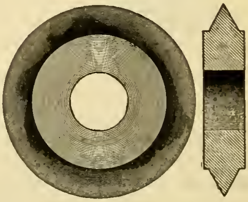


FIG 438. NO. 2 WALWORTH WHEEL.

For the convenience of our customers, we show above full size cuts of different cutter wheels for our No. 1 and 2 cutters.

TOOLS.

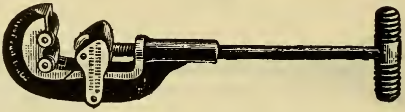


FIG. 439. SAUNDERS PIPE CUTTER.

SAUNDERS PIPE CUTTERS.—FIG. 439.

NO.	1	2	3	4
CUTS PIPE	⅛ to 1	1 to 2	2 to 3	2½ to 4
EACH	3.00	4.50	11.00	18.00
EXTRA BLOCKS AND WHEELS ...... EACH	1.25	1.75	2.75	3.50
EXTRA WHEELS ...... EACH	.24	.32	.60	.60
EXTRA ROLLERS ...... EACH	.24	.32	.50	.50

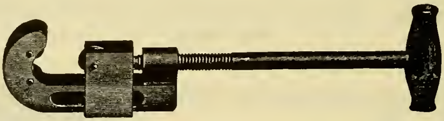
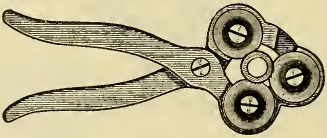


FIG. 440. BARNES 3-WHEEL PIPE CUTTER

BARNES 3-WHEEL PIPE CUTTERS.—FIG. 440.

NO.	1	2	3	4	5	6	7
CUTS PIPE	⅛ to 1	½ to 2	1½ to 3	2½ to 4	4 to 6	6 to 8	9 to 12
EACH	4.50	6.00	10.00	20.00	30.00	40.00	50.00
EXTRA WHEELS ...... EACH	.25	.30	.40	.50	.75	.75	.75
EXTRA WHEEL PINS ...... PER DOZ.	1.00	1.00	1.00	2.00	2.00	2.00	2.00

Walworth Mfg. Co.



Sole Manufacturers

FIG. 441. CONNOR LEAD PIPE CUTTER.

CONNOR LEAD PIPE CUTTERS.—FIG. 441.

This simple labor-saving tool will be appreciated by all who have occasion to cut lead pipe. It does its work quickly, makes a clean, smooth cut, and leaves no chips. Everyone who handles lead pipe in any form should have one. Cuts from ⅛ to 1½ inch pipe.

NICKEL PLATED ...... EACH	2.00
JAPANNED ...... EACH	1.50
CUTTER WHEELS ...... EACH	.25

TOOLS.

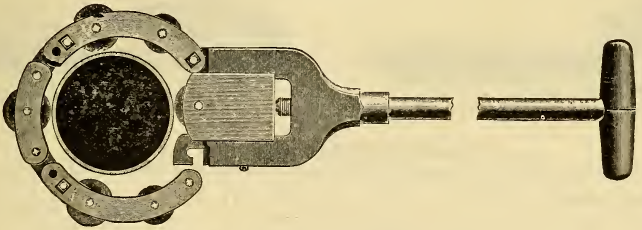


FIG. 441 A. HALL CAST IRON PIPE CUTTER.

THE HALL PATENT PIPE CUTTER.—FIG. 441 A.

FOR CUTTING CAST IRON PIPE IN THE TRENCH.

There are now **about three hundred** of these cutters in the various water works of the country, and with hardly an exception we have received only the strongest words of commendation for them.

In cutting out for a branch in the trench, it is all-important that the **cut should be made clean and to an exact measurement,** that the pipe **should not be cracked on the edges,** and that the work **should be done quickly, without the necessity of making a second cut.** This cutter **completely fills** these requirements.

Should it be **necessary to cut half an inch** from the end of a pipe, it can be done **very easily** with the Hall Cutter.

The **average time** in making a 4, 6, or 8 in. cut is but **four minutes.** The pipe is not cut off, but is **forced off by the wheels,** so that when it breaks it cracks **evenly entirely around the pipe.** There is **no occasion** to use hammer or chisel.

In using the cutter it **is only necessary** to place the links around the pipe, screw down the block, move the handle back and-forth **as much as the trench will allow,** and in a few minutes the cut is finished.

Special circulars, with letters of testimonial and names of companies using these cutters, will be sent on application.

We have no objection to sending this cutter to responsible parties on trial.

HALL CAST IRON PIPE CUTTERS.—FIG. 441 A.

NO. CUTS	No. 1. 4″, 6″, 8″.	No. 2. 10″, 12″, 14″.	No. 3. 16″, 18″, 20″, 24″.
CUTTERS COMPLETE ....EACH	25.00	34.00	50.00
EXTRA LOOPS, WITH WHEELS	7.00	8.25	10.00
BLOCK WITH WHEEL	.95	1.00	1.25
WHEELS	.23	.26	.26
SPINDLE WITH HANDLE	.70	1.00	1.60
EXTRA BOLTS FOR LOOPS	.12	.12	.14

30 inch Loop with Wheels for No. 3, $15.00

TOOLS.

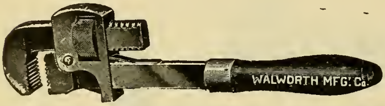


FIG. 442. STILLSON WRENCH, WOOD HANDLE, 6 TO 18 INCHES.

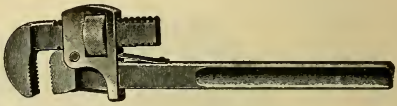


FIG. 442 A. STILLSON WRENCH, STEEL HANDLE, 10 TO 14 INCHES.

STILLSON WRENCHES.—FIG. 442.

LENGTH WHEN OPEN	6	8	10	14	18
GRIPS	⅛ wire to ½ pipe	⅛ wire to ¾ pipe	⅛ wire to 1 pipe	¼ wire to 1½ pipe	¼ wire to 2 pipe
EACH	2.00	2.00	2.25	3.00	4.00

6 inch Wrench with Screw Driver attachment on end of Handle. Finished, each, $2.37; Nickel Plated, $2.75.

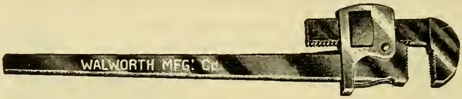


FIG. 443. STILLSON WRENCH, 18 TO 48 INCHES.

STILLSON WRENCHES.—FIG. 443.

18 TO 48 INCHES.

LENGTH WHEN OPEN	18	24	36	48
GRIPS	¼ wire to 2 pipe	¼ wire to 2½ pipe	¼ pipe to 3½ pipe	1 pipe to 5 pipe
EACH	4.00	6.00	12.00	18.00

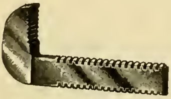


FIG. 444. STILLSON JAW.

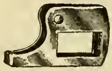


FIG. 445. STILLSON FRAME.

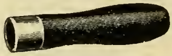


FIG. 446. STILLSON HANDLE.

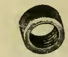


FIG. 447. STILLSON NUT.

REPAIRS FOR STILLSON WRENCHES.

SIZE	6	8	10	14	18	24	36	48
JAWS EACH	.75	.75	.80	1.00	1.33	2.10	4.75	7.25
FRAMES EACH	.35	.35	.40	.50	.55	.80	1.30	1.50
WOOD HANDLES EACH	.16	.16	.18	.25	.28	....	....	....
STEEL HANDLES EACH	.95	.95	1.10	1.45	2.10	3.20	6.40	9.25
NUTS EACH	.11	.11	.14	.17	.22	.35	.55	.95
SPRINGS EACH	.10	.10	.10	.10	.10	.11	.13	.13

TOOLS.

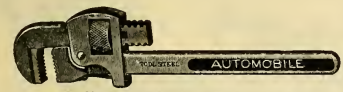
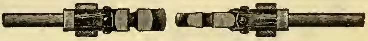


FIG. 447½. STILLSON AUTOMOBILE WRENCH.



CUT SHOWING COMPARATIVE THICKNESS OF JAWS ON REGULAR AND AUTOMOBILE WRENCHES.

STILLSON AUTOMOBILE WRENCH.—FIG. 447½.

8-Inch size grips ⅛ wire to ¾ pipe	Each	$2.00
Jaws	„	.75
Nuts	„	.11
Steel Handles	„	.95
Frames	„	.35

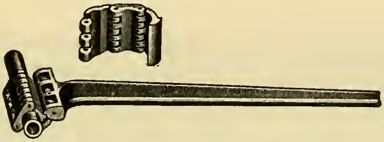


FIG. 448 A. PARMELEE'S GIRDLE PIPE WRENCH.

PARMELEE'S GIRDLE PIPE WRENCHES.—FIG. 448 A.

Length.	No.	Handles Pipe.	Complete in Case.	Extra Stock.	Extra Girth.
10 inches.	1 Imp.	⅛, ¼, ⅜, ½, ¾, 1	$5.00	$1.50	$0.75
20 "	2½ Imp.	¾, 1, 1¼, *1½, *2	7.50	2.00	$1.00–*1.25
25 "	3½ Imp.	1½, 2, 2½, 3	7.50	2.50	1.25

*20 in. No. 2½, girths 1½–2, $1.25 each. All parts are interchangeable. Special girths can be furnished to hold piston rods of any diameter from ⅝ to 3½ O. D.

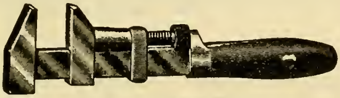


FIG. 449. COE'S WRENCH.

COE'S WRENCHES.—FIG. 449.

SIZE	6	8	10	12	15	18	21
BLACK PER DOZEN	9.00	10.00	12.00	14.00	21.00	30.00	36.00

TOOLS.

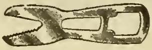


FIG. 452. NO. 1. ALLIGATOR WRENCH.

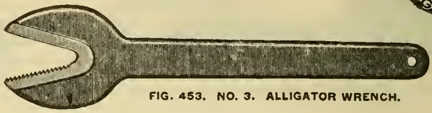


FIG. 453. NO. 3. ALLIGATOR WRENCH.

ALLIGATOR WRENCHES.—FIGS. 452 AND 453.

NO.	1	2	3	4	5
GRIPS PIPE	⅛ to ⅜	⅜ to ¾	½ to 1¼	1¼ to 2	2 to 3
LENGTH	5¾	10	16	22	27
PER DOZEN	4.00	12.00	24.00	36.00	54.00

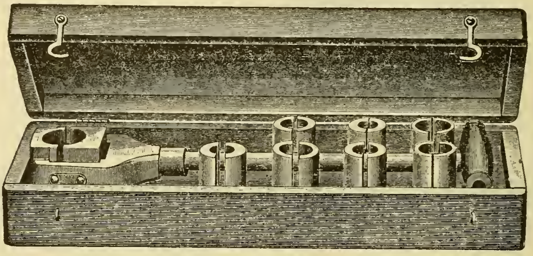


FIG. 454 A. HALL'S BRASS PIPE WRENCH.

HALL'S BRASS PIPE WRENCH.—FIG. 454 A.

No. 1. Grips	¼, ⅜, ½, ¾, 1, Iron Size Pipe ⅝, ¾, ⅞, 1, Plumbers' Pipe	Each	$7.50
No. 1. For Iron Size Pipe only		Each	6.80
No. 2. Grips	1, 1¼, 1½, 2, Iron Size Pipe	Each	12.00
Extra Bushings, No. 1		Each	.30
Extra Bushings, No. 2		Each	.55

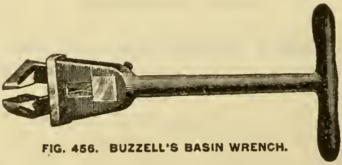


FIG. 456. BUZZELL'S BASIN WRENCH.

Fig. 456. Buzzell's Basin Wrenches ....Each $1.25

TOOLS.

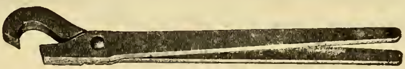


FIG. 457. COMMON TONGS.

COMMON TONGS.—FIG. 457.

SIZE	⅛	¼	⅜	½	¾	1	1¼	1½	2	2½	3	3½	4
EACH	.60	.65	.70	.75	.90	1.10	1.30	1.50	1.90	2.50	4.00	4.50	6.00

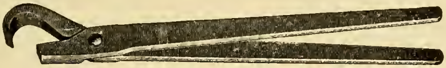


FIG. 458. COIL TONGS.

COIL TONGS.—FIG. 458.

SIZE	¾	1	1¼	1½	2	2½
EACH	1.75	2.00	2.40	3.00	3.75	4.75

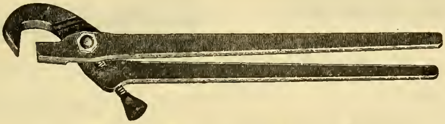


FIG. 459. BROWN'S ADJUSTABLE TONGS.

BROWN'S ADJUSTABLE TONGS.—FIG. 459

NO.	1	1½	2	3	4	5	6	7
FOR PIPE	⅛ to ¾	⅜ to 1	½ to 1¼	1 to 2	1½ to 3	2½ to 4	3 to 5	4 to 7
EACH	1.20	1.50	1.70	2.40	5.40	12.00	20.00	22.00

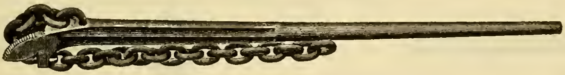


FIG. 460. ROBBINS' CHAIN TONGS.

ROBBINS' CHAIN TONGS.—FIG. 460.

NO.	2	3	4	5	6	7
LENGTH OF LEVER ... INCHES	27	36	48	60	72	84
SIZE OF CHAIN	5/16	5/16	⅜	½	⅝	¾
WEIGHT ... POUNDS	7	12	24	33	50	100
FOR PIPE	1 to 2	1¼ to 4	2 to 6	2½ to 8	4 to 10	4 to 16
EACH	5.50	6.25	9.00	12.50	16.00	30.00

TOOLS.

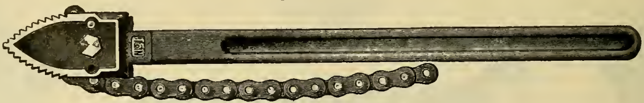


FIG. 461. VULCAN CHAIN TONGS.

VULCAN PATENT CHAIN TONGS.—FIG. 461.

NO.	10	11	12	13	13½	14	15	16
LENGTH .... INCHES	13¾	20	27	37	44¼	50	64	87
WEIGHT .... POUNDS	1¾	4¾	8¾	16	21	29	49	130
FOR PIPE	⅛ to ¾	⅛ to 1½	¼ to 2½	¾ to 4	1 to 6	1½ to 8	2 to 12	4 to 18
EACH	2.50	3.50	5.00	7.00	9.00	11.00	18.00	40.00
EXTRA CHAINS .... EACH	.75	1.00	1.50	2.50	3.25	4.00	6.00	13.00
EXTRA JAWS .... PAIR	1.00	1.75	2.75	4.00	4.75	5.50	7.50	16.00

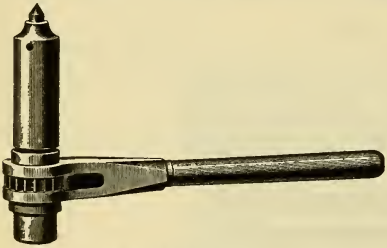


FIG. 462. SLEEVE RATCHET.

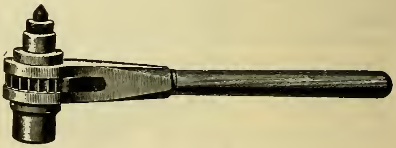


FIG. 463. BOILER RATCHET.

PACKER RATCHETS. — FIGS. 462 AND 463.

NO.	1	2	3	4	5
LENGTH HANDLE	10	12	16	18	24
FIG. 462 .... EACH	10.50	13.50	16.00	19.00	23.00
FIG. 463 .... EACH	9.00	10.50	16.00	....	....

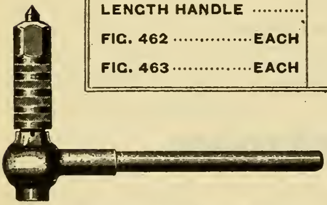


FIG. 464. SLEEVE DRILL STOCK.

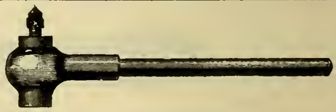


FIG. 465. BOILER DRILL STOCK.

SMITH'S FRICTION DRILL STOCKS.—FIGS. 464 AND 465.

NO.	1	2	3	5
LENGTH HANDLE	10	12	15	20
FIG. 464 .... EACH	10.00	12.00	15.00	23.00
FIG. 465 .... EACH	9.00	10.50	13.50	....

Wrenches for Nos. 1 and 2, each 15 cents.

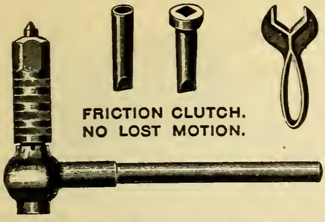

FRICTION CLUTCH.
NO LOST MOTION.

FIG. 465 A. SMITH'S FRICTION DRILL STOCK WITH ROUND TAPER HOLE.

TOOLS.

SMITH'S FRICTION DRILL STOCK WITH ROUND TAPER HOLE.

This stock has a round taper hole in the body and is provided with extra collets which permit of the use of either round taper shank or square taper shank standard twist drills or square taper flat drills.

PRICE LIST.

No. 12.	12 in. Handle, with 2 collets for both Nos. 1 and 2 Round Taper Shank Twist Drills and ⅝ in. Square Taper Shank Twist or Flat Drills, including Wrench	$18.00
No. 13.	15 in. Handle, with 3 collets for Nos. 1, 2, and 3 Round Taper Shank Twist Drills and ⅝ in. Square Taper Shank Twist or Flat Drills, including Wrench	25.00

SMITH'S PATENT REVERSIBLE FRICTION COMBINATION DRILL STOCKS.—FIG. 465 B.

FOR USE AS A DRILL, SOCKET WRENCH, AUGER BIT-BRACE, OR SCREW-DRIVER STOCK.

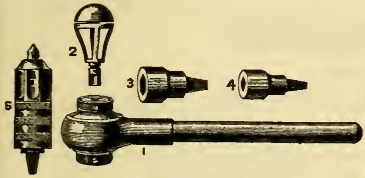


FIG. 465 B. SMITH'S REVERSIBLE FRICTION DRILL STOCKS.

No. A.	6 in. Handle, with Hand-Rest only (no Sleeve Feed), with ⅜ in., ½ in., and ⅝ in. Square Sockets	$5.00
No. B.	8 in. Handle, with Hand-Rest and Sleeve Feed, without Sockets	10.00
No. C.	10 in. Handle, with Hand-Rest and Sleeve Feed, without Sockets	12.00
No. D.	12 in. Handle, with Hand-Rest and Sleeve Feed, without Sockets	15.00

SMITH'S NEW REVERSIBLE FRICTION COMBINATION DRILL STOCKS.—FIG. 465 C.

FOR USE AS A DRILL, SOCKET WRENCH, AUGER BIT-BRACE, OR SCREW-DRIVER STOCK.

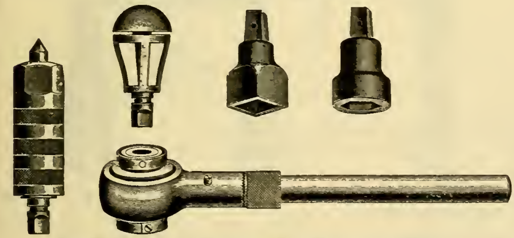


FIG. 465 C. SMITH'S NEW REVERSIBLE FRICTION DRILL STOCKS.

No. AA.	6 in. Handle, with Hand-Rest only (no Sleeve Feed), with ⅜ in., ½ in., and ⅝ in. Sq. Sockets,	$6.50
No. BB.	8 in. Handle, with Hand-Rest and Sleeve Feed, without Sockets	11.50
No. CC.	10 in. Handle, with Hand-Rest and Sleeve Feed, without Sockets	13.50
No. DD.	12 in. Handle, with Hand-Rest and Sleeve Feed, without Sockets	16.50
No. EE.	15 in. Handle, with Hand-Rest and Sleeve Feed, without Sockets	19.50

EXTRA MALLEABLE IRON SOCKETS FOR SMITH'S PATENT REVERSIBLE FRICTION COMBINATION DRILL STOCKS.

PRICE LIST.

For No. A Stock, ⅜ in., ½ in., ⅝ in. Square Sockets	Each,	$ .10
For No. B Stock, ⅜ in., ½ in., ⅝ in., ¾ in., ⅞ in., 1 in. Square or Hexagonal	Each,	.25
For No. C Stock, ⅜ in., ½ in., ⅝ in., ¾ in., ⅞ in., 1 in., 1⅛ in., 1¼ in. Square or Hexagonal	Each,	.25

STEEL SOCKETS.

For No D Stock, ¾ in., ⅞ in., 1 in., 1⅛ in., 1¼ in., 1⅜ in., 1½ in. Square or Hexagonal	Each,	$ .40
For No. E Stock, 1 in., 1⅛ in., 1¼ in., 1⅜ in., 1½ in., 1⅝ in., 1¾ in., 1⅞ in., 2 in Square or Hexagonal	Each,	.40

TOOLS.

SMITH'S PERFECTED FRICTION TRACK DRILL.—FIG. 465 D.

DESCRIPTION OF TRACK DRILL.

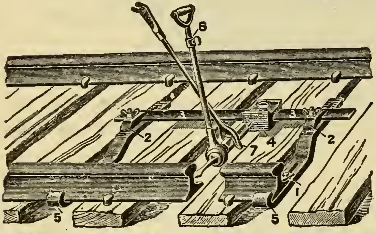


FIG. 465 D. SMITH'S PERFECTED FRICTION TRACK DRILL.

A rail can be drilled with equal facility either fastened to the ties or detached, as the bars (No. 5) hook on one side of the base of the rail in connection with an adjustable clamp (No. 1) on the other side, thus holding the frame firmly, and both bars and frame can be adjusted to any size of rail The side bars (No. 5) are made with corrugations that intermash with corresponding grooves on the under side of the back bar (No. 3), which is held firmly by an adjustable clamp (No. 2) corrugated on its under side, thus enabling the operator to move the bars (No. 5) very quickly near together or far apart without interfering with the railroad ties.

The drill-stock has an adjustable extension handle (No. 6), giving a leverage to suit the operator The hand-piece, working on a spindle, imparts an easy, natural motion to the whole body

As the rails to be drilled vary in height, a number of parallel grooves are made on both sides of the rack-rest (No. 4), which slides both ways on the rear bar of frame, so that either side can be used The conical end of feed-screw fits into the groove corresponding to the size of rail to be drilled, thus holding the rail in a horizontal position ; this saves unnecessary waste of time in trying to center the drill.

This device can be used at a frog, switch, or anywhere that two or more rails come close together, as the bars can be caught on either rail, and the back bar can be adjusted to any direction, using a long or short drill as most convenient.

PRICE, including Two Drill Points.......... 30.00 | Extra Drill Points.................. .40

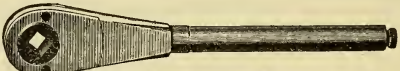


FIG. 467. RATCHET WRENCH.

MOORE'S TRIPLE-ACTION RATCHET WRENCHES.—FIG. 467.

NO.	1	2	3	4
SIZE OF SQUARE	⅜, ½, ⅝	⅝, ¾	⅞, 1, 1⅛	1⅜, 1½
SIZE OF SIX-SIDED HUB	⅝, ¾	⅞, 1	1⅛, 1¾	1½, 1¾
WITH ONE HUB ONLY	3.00	4.00	5.00	7.00
EXTRA HUBS	.50	.60	.75	1.00

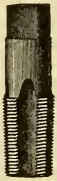


FIG. 468. PIPE TAP.

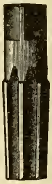


FIG. 469. PIPE REAMER.

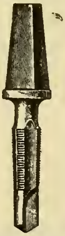


FIG. 470 COMBINED TAP, REAMER, AND DRILL.

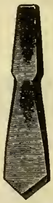


FIG. 471. PIPE DRILL.

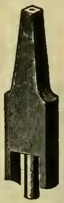


FIG. 472. COUNTER BORE.

PIPE TAPS, REAMERS, AND DRILLS.—FIGS. 468, 469, 470, 471, AND 472.

SIZE	⅛	¼	⅜	½	¾	1	1¼	1½	2	2½	3	3½	4
FIG. 468. TAPS	1.12	1.25	1.50	1.87	2.50	3.12	3.75	4.62	6.25	10.50	15.00	42.00	50.00
FIG. 469. REAMERS	...	1.25	1.50	1.87	2.50	3.12	3.75	4.62	6.25	10.50	15.00	42.00	50.00
FIG. 470. Comb'd Tap, Reamer & Drill		2.50	2.50	3.00	4.50	6.00	7.25	8.50	10.75				...
FIG 471. DRILLS	.91	.91	.95	.98	1.04	1.14	1.23	1.35	1.56	1.80	3.25		
FIG. 472. COUNTER BORES						2.90	3.00	3.25	3.50	4.25	5.00		

TAPS FOR PLUMBERS' BRASS PIPE.

SIZE	⅝	¾	⅞	1	1¼	1½	1¾	2	2½
EACH	1.75	2.00	2.25	2 75	3.75	4.75	5.50	6.25	8.00

TOOLS.

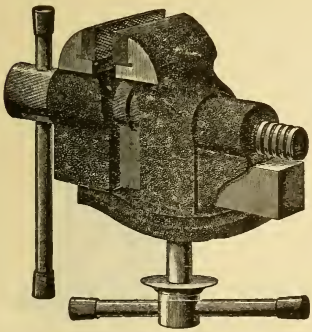


FIG. 473. WALWORTH PIPE VISE.

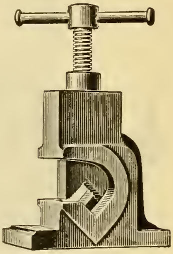


FIG. 473 A. WALWORTH KLINGFAST VISE

WALWORTH PIPE VISE.—FIG. 473.

5 inch Jaw for Pipe ⅛ to 6 inch......Each, $18.00

WALWORTH KLINGFAST VISE.—FIG. 473 A.

No. 1. For Pipe ⅛ to 2 inch ... ...Each, $3.00

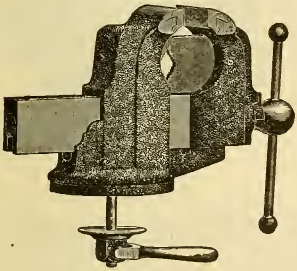


FIG. 474. PARKER COMBINATION VISE.

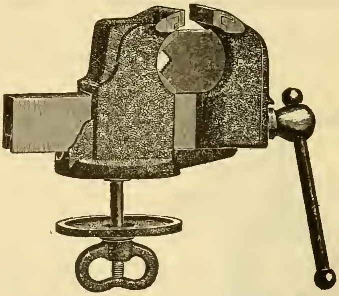


FIG. 475. SMITH'S COMBINATION VISE.

PARKER COMBINATION PIPE VISES.—FIG. 474.

	For Pipe.	Each.
NO. 87	⅛ to 2	16.00
NO. 88	½ to 3	20.00
NO. 88 1-2	½ to 4	28.00
NO. 89 1-2	½ to 6	35.00

SMITH'S COMBINATION PIPE VISES.—FIG. 475.

	For Pipe	Each.
NO. 1	⅛ to 2	16.00
NO. 2	½ to 3	20.00
NO. 3	½ to 4	28.00

For repair list on Vises see pages 228 and 229

TOOLS.

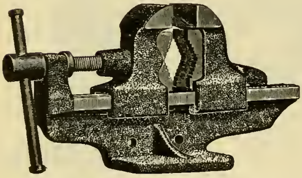


FIG. 478. ARMSTRONG COMBINATION VISE.

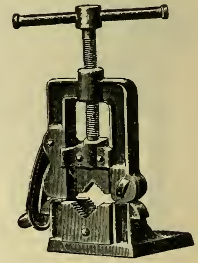


FIG. 479. ARMSTRONG HINGE VISE.

ARMSTRONG'S COMBINATION VISES.

FIG. 478.

For Pipe.	Each
⅛ to 3 inch, with Socket for Legs.	16.00
⅛ to 3 inch, without Sockets	12.00

ARMSTRONG'S HINGE VISES.

FIG. 479.

No	For Pipe	Each.
No. 1	⅛ to 2½	10.00
No. 2	½ to 4½	20.00

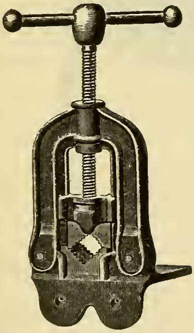


FIG. 480.
MALLEABLE HINGE VISE.

MALLEABLE HINGE VISES.—FIG. 480.

No.	For Pipe.	Each.
No. 1..	⅛ to 2	10.00
No. 2..	⅛ to 3	14.00

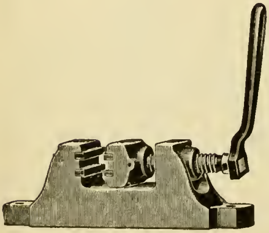


FIG. 480A. SEARLE'S VISE.

SEARLE'S VISE.—FIG. 480A.

No.	For Pipe.,	Each.
No. 2..	⅛ to 1	6.50
No. 3..	¾ to 2	10.00

For list on repairs for Vises see pages 228 and 229.

TOOLS.

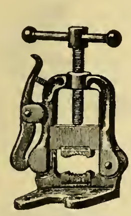


FIG. 481A. VANDERMAN HINGE VISE.

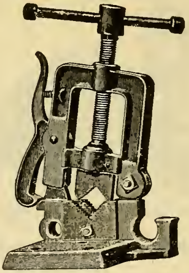


FIG. 481B. VANDERMAN VISE WITH BENDING FORM.

VANDERMAN'S HINGE VISES.—FIG. 481A.

No	For Pipe.	Weight, Pounds.	Each.
NO. 1	⅛ to 1¼	7	4.50
NO. 2	⅛ to 2	10	5.50

VANDERMAN'S HINGE VISES.—FIG. 481B. WITH BENDING FORM.

No.	For Pipe.	Each.
NO. 1	⅛ to 1¼	8.00
NO. 2	⅛ to 2	9.00
NO. 3	⅛ to 2½	10 00

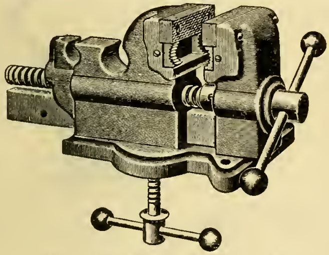


FIG. 481C. VANDERMAN COMBINATION VISE.

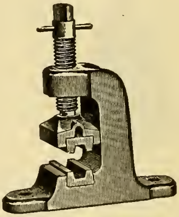


FIG. 481D. SPENCER VISE.

VANDERMAN COMBINATION VISES.—FIG. 481C.

NO. 0.	For Pipe ⅛″ to 2½″ with Bending form to 1″	Each 15.00
NO. 1.	For Pipe ⅛″ to 7″ with Bending form to 1½″	Each 20.00
NO. 3.	For Pipe ⅛″ to 10″ with Bending form to 2″	Each 30 00

SPENCER VISES.—FIG. 481D.

NO. 2.	For Pipe ⅛″ to 2½″	Each 3.00

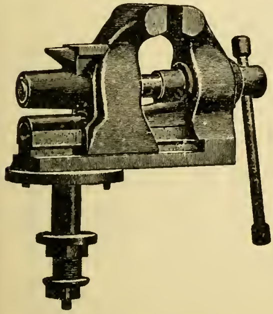


FIG. 481F. COVERED SCREW VISE.

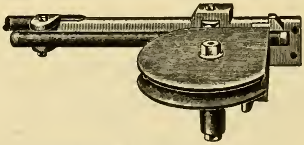


FIG. 481E. PIPE BENDING MACHINE.

PIPE BENDING MACHINES.—FIG. 481E.

NO. 1.	Bends Pipe ¾″ to 1″	Each 20.00
NO. 2.	Bends Pipe 1½″	Each 24.00

COVERED SCREW VISES.—FIG. 481F.

WIDTH OF JAW	2	2½	3	3½	4	4½	5	6
WEIGHT......POUNDS	5	22	39	47	56	67	75	116
WITHOUT IRON SEAT......EACH	4.00	5.50	7.00	9.00	10.00	12.50	17.00	25.00
IRON SEAT EXTRA......EACH	.50	75	1.00	1 00	1.25	1.50	1.75	2.00

TOOLS.

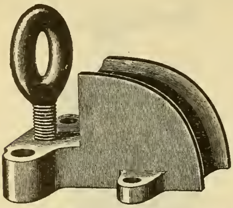


FIG. 487 A. VANDERMAN BENDING FORM.

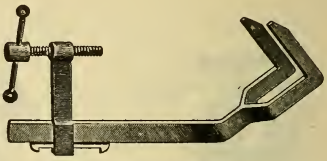


FIG. 488. IRON CROW.

VANDERMAN BENDING FORMS.

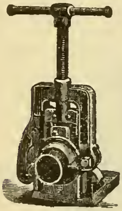
FIG. 487 A.

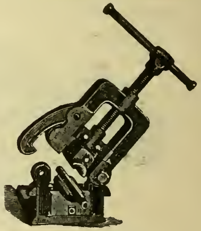
No.	Bends Pipe.	Each.
NO. 1	$\frac{1}{8}$ to $1\frac{1}{4}$	3.50
NO. 2	1 to 2	4.50

IRON CROWS.

FIG. 488.

No.	For Pipe.	Each.
NO. 1	$1\frac{1}{2}$ to 3	10.00
NO. 2	$1\frac{1}{2}$ to 6	13.00
NO. 3	$1\frac{1}{2}$ to 12	16.00





ARMSTRONG BRASS PIPE JAWS.

CUTS SHOW METHOD OF ATTACHING JAWS.

PRICE LIST.

		Each Size.
Brass Pipe Jaws for No. 1 Hinge Vise	$\frac{5}{8}$, $\frac{3}{4}$ or $\frac{7}{8}$ O. Dia. $\frac{1}{8}$, $\frac{1}{4}$ or $\frac{3}{8}$ I.P. Size	$ .75
Brass Pipe Jaws for No. 1 Hinge Vise	1, $1\frac{1}{8}$ or $1\frac{1}{4}$ O. Dia.	1.00
Brass Pipe Jaws for No. 1 Hinge Vise	$1\frac{3}{8}$, $1\frac{1}{2}$ or $1\frac{5}{8}$ O. Dia. $\frac{1}{2}$, $\frac{3}{4}$ or 1 I.P. Size	1.25
Brass Pipe Jaws for No. 1 Hinge Vise	$1\frac{3}{4}$, $1\frac{7}{8}$ or 2 O. Dia.	1.50
Brass Pipe Jaws for No. 1 Hinge Vise	$2\frac{1}{8}$, $2\frac{1}{4}$ or $2\frac{3}{8}$ O. Dia. $1\frac{1}{4}$, $1\frac{1}{2}$ or 2 I.P. Size	1.75

REPAIRS FOR VISES.

WALWORTH VISE.—FIG. 473.

Front or Sliding Jaw, each	$5.75
Small Steel Jaws, per pair	2.25
Tail Screw	1.30
Long Handle	1.30
Short Handle	1.20
Steel Collar	.40
Large Vise Screw	2.25
Flange	.30
Vise Jaw Screws, each	.10
Headless Screws, each	.10

TOOLS.

REPAIRS FOR VISES.

WALWORTH KLINGFAST VISE.—FIG. 473 A.

VISE SCREW	.80
HANDLE	.35
EXTRA JAW	.70

PARKER VISE.—FIG. 474.

NO.	87	88	88½	89½
SLIDING JAW	2.00	2.50	4.50	5.00
BACK JAW	3.00	3.50	5.50	6.50
VISE SCREW	1.00	1.50	2.50	3.00
NUT	.35	.35	.35	.35
SMALL STEEL JAWS EACH	.50	.50	.50	.65
PIPE JAWS PER PAIR	1.50	1.50	2.00	3.00

SMITH'S VISE.—FIG. 475.

		No. 1.	No. 2.	No. 3.
Back Jaw, with Parallel Jaw	Each,	$3.00	$3.75	$4.25
Front or Sliding Jaw, with Parallel Jaw	„	3.00	3.75	4.25
Long "V" Pipe Jaw, Single	„	.75	1.00	1.25
Short "V" Pipe Jaw, Double	„	1.25	1.75	2.25
Screw Nut, Handle and Collar	„	1.75	2.00	2.25
Nut	„	.25	.35	.45
Hand Nut	„	.25	.25	.25
Bench Bolt	„	.15	.15	.15
Large Washer, Swivel	„	.20	.20	.20
Small Washer	„	.10	.10	.10
Collar for Screw	„	.10	.10	.10
Parallel Jaw	„	.50	.50	.50

ARMSTRONG COMBINATION VISE.—FIG. 478.

Bed or Base	Each,	$3.00
Front Jaw	„	3.00
Back or Sliding Jaw	„	3.00
Screw with Handles	„	1.50
Pipe Jaws, per set of 3	„	1.50
Rivets	„	.20

ARMSTRONG MALLEABLE HINGE VISES.—FIG. 479.

		No. 1.	No. 2.
Jaws, Upper	Each,	$ .50	$ .75
Jaws, Lower	Per Pair,	1.00	1.50
Base	Each,	1.50	3.00
Hinge Bolt	„	.10	.15
Hook	„	.50	1.00
Top	„	1.50	3.00
Hook Rivet	„	.05	.10
Screw and Handle	„	.75	1.50
Slide	„	.30	.60
Lower Jaw Bolt	„	.10	.15
Upper Jaw Rivets	„	.06	.12

MALLEABLE HINGE VISES.—FIG. 480.

		No. 1.	No. 2.
Steel Jaws	Per Set,	$ .75	$ .90

TOOLS.

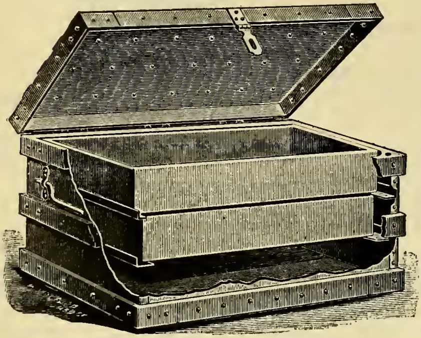


FIG. 491 A. STEEL TOOL CHESTS, STYLE B.

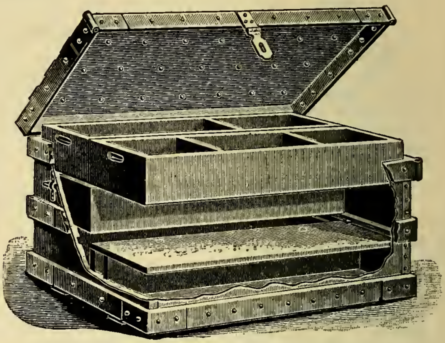


FIG. 491 B. STEEL TOOL CHEST, STYLE D.

STEEL TOOL CHESTS.—FIG. 491 A. STYLE B.

NO.	1	2	3	4
DEPTH INCHES	11	14	16	19
WIDTH "	12	15	17	20
LENGTH "	24	30	36	42
WITH ONE TILL EACH	13.00	18.50	20.50	23.00
WITH TWO TILLS "	13.50	19.00	21.00	24.00

STEEL TOOL CHESTS.—FIG. 491 B. STYLE D.

NO.	1	2	3	4
DEPTH INCHES	11	14	16	19
WIDTH "	12	15	17	20
LENGTH "	24	30	36	42
EACH	15.50	21.00	23.00	26.00

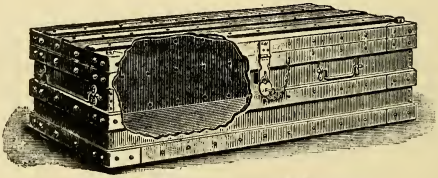


FIG. 491 C. STEEL TOOL CHESTS, STYLE C.

STEEL TOOL CHESTS.—FIG. 491 C. STYLE C.

NO.	1	2	3	4
DEPTH INCHES	11	11	11	11
WIDTH "	12	12	12	12
LENGTH "	30	36	42	48
EACH	12.50	15.00	17.00	20.00

TOOLS.

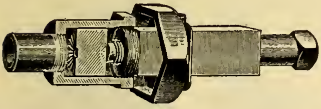


FIG. 492. ASHLEY NIPPLE HOLDER FOR BENCH USE.

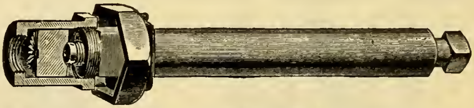


FIG. 492 A. FOR MACHINE USE.

ASHLEY PATENT NIPPLE HOLDERS.—FIGS. 492 AND 492 A.

FOR HOLDING RIGHT AND LEFT NIPPLES.

No. 1. Fig. 492. 6 Sleeves for ⅛, ¼, ⅜, ½, ¾, and 1″ nipples	$15.00
Sleeves only	1.50
No. 2. Fig. 492. 3 Sleeves for 1, 1¼, and 1½″ nipples	15.00
Sleeves only	2.50
No. 1. Fig. 492 A. 6 Sleeves for ⅛ ¼, ⅜, ½, ¾, and 1″ nipples	25.00
Sleeves only	1.50
No. 2. Fig. 492 A. 4 Sleeves for 1, 1¼, 1½, and 2″ nipples	30.00
Sleeves only, 1, 1¼, and 1½″	2.50
Sleeves only, 2″	5.00
No. 1. Fig. 492 is for use with No. 1 Die Plate	
No. 2. Fig. 492 is for use with No. 2 Die Plate	

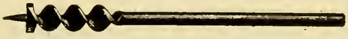


FIG. 493. GAS FITTERS' AUGER.

GAS FITTERS' AUGERS.—FIG. 493.

NO.	1	2	3	4	5	6	7	8	9
DIAMETER OF AUGER	⅝	¾	⅞	1¼	1½	1¾	2	2½	3
FOR PIPE	¼	⅜	½	¾	1	1¼	1½	2	2½
EACH	.80	1.00	1.12	1.60	1.92	2.25	2.50	3.60	4.32

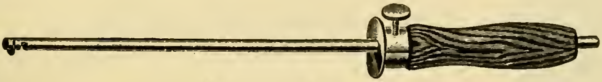


FIG. 494. MORRILL'S GAUGE GLASS CUTTER.

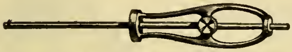


FIG. 495. SIMPLEX GAUGE GLASS CUTTER.

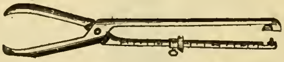


FIG. 495 1-2. H. & C. GAUGE GLASS CUTTER

GAUGE GLASS CUTTERS.—FIGS. 494, 495 AND 495 1-2.

Fig. 494. Morrill's Gauge Glass Cutter. 9 inch, each $1.00. 14 inch, each, $1.50.

Fig. 495. Simplex Gauge Glass Cutter, each 25c.

Fig. 495½. H. & C. Gauge Glass Cutters, No. 1, 5 inch, each, $2.00; No. 2, 7 inch, each, $2.50.

Extra Wheels, each 15c.

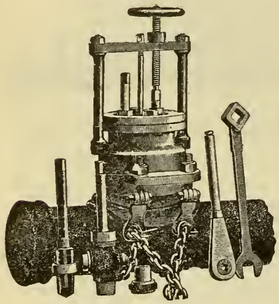


FIG. 496. HALL'S PATENT TAPPING MACHINE.

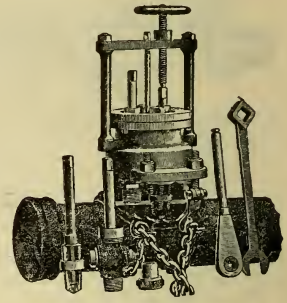


FIG. 496. SECTIONAL VIEW.

HALL'S PATENT TAPPING MACHINE.

FOR TAPPING WATER OR GAS MAINS UNDER PRESSURE. MADE OF BEST COMPOSITION.

HAVING brought this Tapping Machine to a high state of perfection, we unhesitatingly recommend it, and feel confident that it has more real merit than any other on the market.

It is simple, durable, strong, well made, free from valves and complications, and all parts are interchangeable. It will stand any pressure, and take almost any style of service cock, avoiding the necessity of using a special make, and having the usefulness of the machine depend upon the supply at hand.

Our One Machine, which taps sizes from ½ to 1¼ inches, inclusive, will do the work which usually requires two or three machines of different sizes, and can be used equally well on mains of any size from 4 in. to 24 in. by simply changing the rubber form which is placed between the machine and main.

Its working principle is simple and correct. Between the top flange and the flat ring is placed a circular revolving plate (through which the drill shank and cock carrier shank pass), resting in a proper seat, properly packed and bolted. The object of this plate, as can be readily seen from the sectional view, is to enable the operator after having drilled and tapped the hole and backed out the drill, to immediately bring the cock into position by simply rotating the plate. The adjustable pivot stud extending from the centre of the cross-bar being forced down upon the centre of the plate, receives and resists the water pressure, and acts as a pivot, thus relieving the working parts from severe strain, and permitting the plate to revolve easily under heavy pressure, without damage to the packing.

PRICE.

Machine for ½, ⅝, ¾, and 1 inch cocks, with Drill-Taps, Mandrels, Wrenches, Ratchet, and Rubbers, for 4 to 16 inch mains	$80.00

PRICE LIST OF PARTS FOR HALL'S TAPPING MACHINE.

Chains	each	$2.00
Clutch Bolts	„	1.75
Lug Bolts	„	1.10
Follower or Cock Carrier	„	4.00
Sockets or Bushings	„	1.40
Large Steel Wrench	„	1.25
Small Steel Wrench	„	.75
Feed Screw	„	1.75
Cross Bar	„	2.50
Revolving Brass Plate	„	4.00
Stuffing Box Nuts	each	$ .75
Brass Gaskets	„	1.00
Leather Packing for Disc	„	.75
Pure Rubber Gaskets 4" $3.00; other size	„	2.25
Ratchet Wrench	„	4.75
Combination Drill and Tap, ½	„	2.00
Combination Drill and Tap, ⅝	„	2.50
Combination Drill and Tap, ¾	„	3 00
Combination Drill and Tap, 1	„	3.25
Combination Drill and Tap, 1¼	„	6.00

TOOLS.

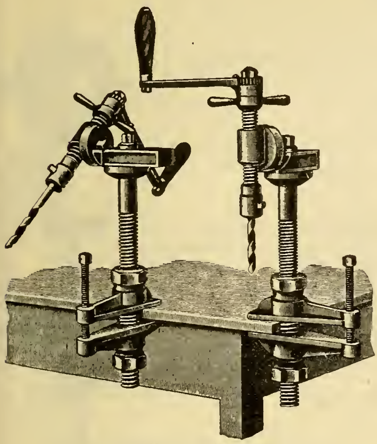


FIG. 497. HUNTER'S HAND DRILL.

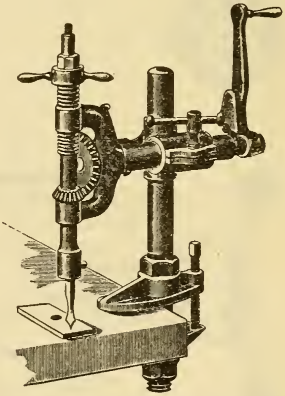


FIG. 498. UNIVERSAL, ANGULAR, AND RATCHET DRILL

HUNTER'S HAND DRILLS.—FIG. 497.

No 1 drills up to ¾ inch, weight, 11 lbs.	each $20.00
No. 2 drills up to 1 inch; weight, 26 lbs.	each 25.00
No. 3 drills up to 1½ inch; weight, 53 lbs.	each 35.00

Above prices for straight socket, with Morse Tapei Socket, add No. 1, $1.00; No. 2, $2.00; No. 3, $2.50.

UNIVERSAL, ANGULAR, AND RATCHET DRILL.—FIG. 498.

NO.	1	2	3
DRILLS UP TO	⅝	1	1½
WEIGHT	26	52	106
EACH	20.00	25,00	40.00

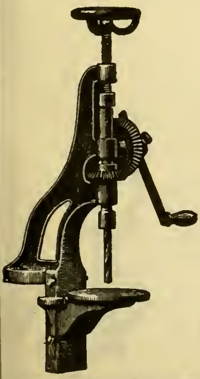


FIG. 499. UPRIGHT BENCH DRILL.

UPRIGHT BENCH DRILLS.—FIG. 499.

No. 8 drills ⅛ to ¾; weight, 55 lbs.	each $12.00

UPRIGHT SELF-FEEDING DRILLS.
FIG. 500.

No. 1, with balance wheel	each $28.00
No. 1, with pulleys for power	each 31.00

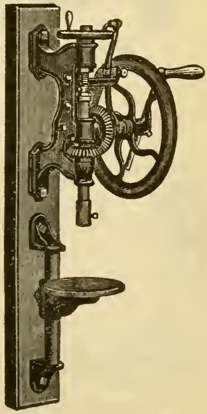


FIG. 500. UPRIGHT SELF-FEEDING DRILL.

TOOLS.

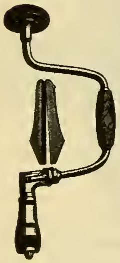


FIG. 501. BARBER'S RATCHET BRACE.

BARBER'S RATCHET BRACES.—FIG. 501.

NO.	30	31	32	33
SWEEP .... INCHES	14	12	10	8
PER DOZEN	42.00	39.00	36.00	33.00

BREAST DRILLS.—FIG. 502.

No. 12.	Per dozen	$30.00
No. 13.	"	48.00

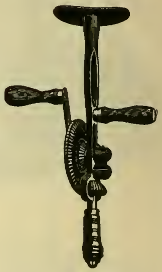


FIG. 502. BREAST DRILL.

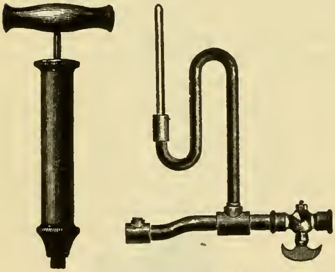


FIG. 503. PROVING PUMP, WITH SIPHON.

PROVING PUMP, WITH SIPHON.—FIG. 503.

WALWORTH MFG. CO.'S PATTERN.

Each	$8.00

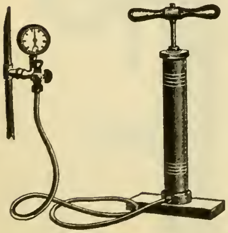


FIG. 504 PROVING PUMP AND GAUGE.

PROVING PUMP AND GAUGE.—FIG. 504.

Pump, Gauge, and Ether Cock, complete, with 4 ft. of Hose	$15.00
Pump only, with 4 ft. of Hose	7.00
Gauge only	5.50
Ether Cock only	3.00

PLUMBERS' FORCE PUMP.—FIG. 505.

Each	$6.00

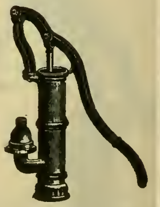


FIG. 505. PLUMBERS' FORCE PUMP.

TOOLS.

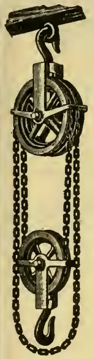


FIG. 506.
WESTON'S DIFFERENTIAL BLOCK.

WESTON'S DIFFERENTIAL BLOCKS.—FIG. 506.

CAPACITY .... TONS	¼	½	1	1½	2	3
REGULAR HOIST .... FEET	6	7	8	8½	9	10
WEIGHT .... POUNDS	22	30	51	81	122	173
EACH	18.00	21.00	28.00	36.00	45.00	60.00
EXTRA CHAIN .... PER FOOT	.70	.70	.75	.80	.85	1.00

For each additional foot of lift allow 4 feet of chain.

BOSS JACK SCREWS.—FIG. 508.

No.	Diameter of Screw.	Height of Base.	Whole Height, Screw Down.	Whole Height, Screw Up.	Each.
	INCHES.	INCHES.	INCHES.	INCHES.	
1	1½	8	11½	16	3.00
2	1⅝	11	15	22	3.75
3	1¾	9	13	18	4.25
4	1¾	12	16	24	4.75
5	2	8	12	16	5.00
6	2	14	18	28	6.00

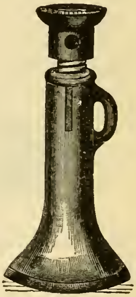


FIG. 508. BOSS JACK SCREW.

FIG. 509. BELL BOTTOM JACK SCREW.

BELL BOTTOM JACK SCREWS.—FIG. 509.

SIZE	1¼	1¼	1½	1½	1½	1½	1¾	1¾	1¾	1¾
HEIGHT BASE	6	8	6	8	10	12	6	8	10	12
HEIGHT OVER ALL	8¾	10¾	9	11	13	15	9½	11½	13½	15½
EACH	3.10	3.40	3.75	4.25	4.75	5.25	4.50	5.00	5.75	6.25

SIZE	2	2	2	2	2	2¼	2¼	2¼	2¼	2¼	2½	2½	2½	2½	2½
HEIGHT BASE	8	10	12	14	16	8	10	12	14	16	8	10	12	14	16
HEIGHT OVER ALL	12	14	16	18	20	12	14	16	18	20	12½	14½	16½	18½	20½
EACH	6.00	6.75	7.50	8.25	9.25	7.50	8.25	9.00	10.00	11.00	8.75	9.75	10.75	12.00	13.25

TOOLS.

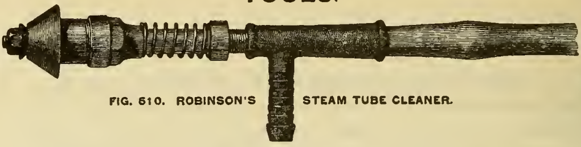
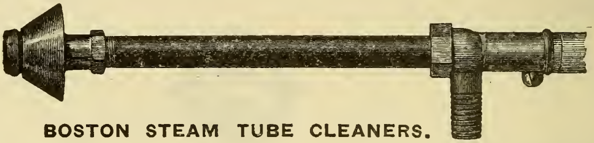


FIG. 510. ROBINSON'S STEAM TUBE CLEANER.

ROBINSON'S STEAM TUBE CLEANERS.—FIG. 510.

NO.	1	2
FOR TUBES	1½ to 2½	2 to 4
EACH	8.50	10.00

Above for Cleaners only. Valves and Hose extra.



BOSTON STEAM TUBE CLEANERS.
FIG. 511.

NO.	0	1	2	3	
FOR TUBES	1 to 1¼	1¼ to 2½	2½ to 3½	3½ to 4½	
EACH	7.50	8.00	9.00	10.00	
HEADS ONLY EACH	5.00	5.50	6.00	7.00	

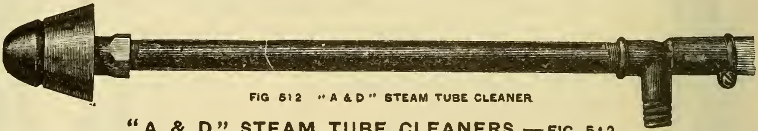


FIG 512 "A & D" STEAM TUBE CLEANER

"A & D" STEAM TUBE CLEANERS.—FIG 512

NO.	1	2	3	4	5	6
FOR TUBES	1 to 1½	1¾ to 2½	2¾ to 3¼	3½ to 4	4½ to 8	8½ to 16
EACH	7.00	8.00	9.00	10 00	12.00	15.00

Above for Cleaners only Valves and Hose extra.

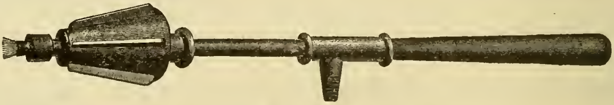


FIG. 512 A. COGGESHALL'S STEAM TUBE CLEANER

COGGESHALL'S STEAM TUBE CLEANERS.—FIG. 512 A.

NO.	1	2	3
FOR TUBES	1 to 2¾	3 to 3½	3½ to 5½
EACH	9.50	10.00	10.50
HEADS ONLY EACH	5.00	5.00	5.00

TOOLS.

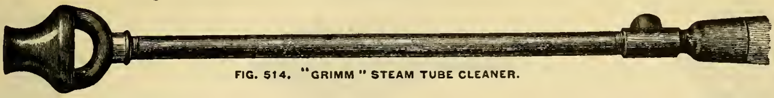


FIG. 514. "GRIMM" STEAM TUBE CLEANER.

"GRIMM" STEAM TUBE CLEANERS.—FIG. 514.

NO.	0	1	2	3
FOR TUBES	1 to 2	2 to 3	3 to 4	4 to 5
WITHOUT HOSE	6.00	6.00	8.00	10.00

Above for Cleaners only. Valves and Hose extra.

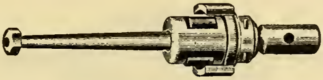


FIG. 517. HENDERER ROLLER TUBE EXPANDER.

HENDERER ROLLER TUBE EXPANDERS.—FIG. 517.

SIZE	1	1¼	1½	1¾	2	2¼	2½	2¾	3	3¼	3½	3¾	4
EACH	10.00	10.00	10.00	10.00	10.00	12.00	14.00	16.00	18.00	20.00	23.00	25.00	30.00
MANDRILS ... EACH	1.00	1.50	1.75	2.00	2.50	3.00	3.50	3.50	4.00	4.50	5.00	5.75	6.50
ROLLS ...... EACH	.50	.60	.70	.80	1.00	1.15	1.30	1.45	1.60	1.75	2.00	2.25	2.50

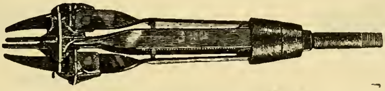


FIG. 518. NATIONAL TUBE CLEANER.

NATIONAL TUBE CLEANERS.—FIG. 518.

SIZE	1¼	1½	2	2¼	2½	2¾	3	3¼	3½	4	4½	5	6
EACH	2.00	2.00	2.00	2.25	2.50	2.75	3.00	3.25	3.50	4.00	4.50	5.00	7.50

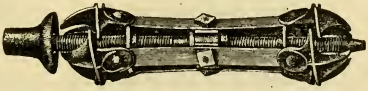


FIG. 519. ENGINEERS' FAVORITE TUBE CLEANER.

ENGINEERS' FAVORITE TUBE CLEANERS.—FIG. 519.

SIZE	1¾	2	2¼	2½	2¾	3	3¼	3½	4	4½	5	6
EACH	2.00	2.00	2.25	2.50	2.75	3.00	3.25	3.50	4.00	5.00	6.25	7.50

TOOLS.

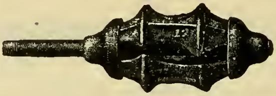


FIG. 520. ELASTIC TUBE CLEANER.

ELASTIC TUBE CLEANERS.—FIG. 520

SIZE	1½	1¾	2	2¼	2½	2¾	3	3¼	3½	3¾	4
EACH	1.50	1.75	2.00	2.25	2.50	2.75	3.00	3.25	3.50	3.75	4.00

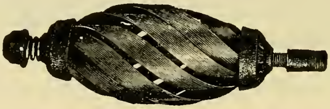


FIG. 521. CHRISTOFFEL SPRING TUBE CLEANER.

CHRISTOFFEL ELLIPTIC TUBE CLEANERS.—FIG. 521.

SIZE	1¼	1½	2	2¼	2½	2¾	3	3¼	3½	3¾	4	4½	5	6
EACH	2.00	2.00	2.00	2.25	2.50	2.75	3.00	3.25	3.50	3.75	4.00	5.65	6.25	7.50

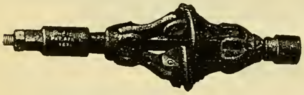


FIG. 522. INGALLS' TUBE CLEANER.

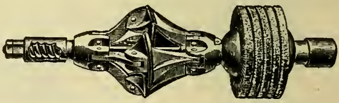


FIG. 522 A. INGALLS' COMBINATION CLEANER.

INGALLS' TUBE CLEANERS.—FIGS. 522 AND 522 A.

SIZE	2	2¼	2½	2¾	3	3¼	3½	4	4½	5	6
FIG. 522 EACH	2.00	2.25	2.50	2.75	3.00	3.25	3.50	4.00	4.50	5.00	6.00
FIG. 522 A EACH	2.50	2.81	3.13	3.43	3.75	4.06	4.38	5.00	5.62	6.25	7.50

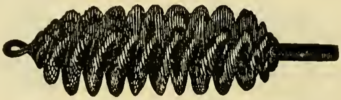


FIG. 523. CHRISTOFFEL COIL TUBE CLEANER.

CHRISTOFFEL COIL TUBE CLEANERS.—FIG. 523.

SIZE	1¼	1½	2	2¼	2½	2¾	3	3¼	3½	3¾	4
EACH	1.00	1.00	1.10	1.20	1.30	1.40	1.50	1.65	1.75	1.90	2.00

TOOLS.

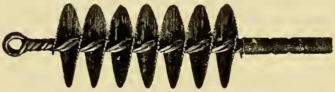


FIG. 524. STEEL WIRE TUBE CLEANER.

STEEL WIRE TUBE CLEANERS.—FIG. 524.

SIZE	1	1¼	1½	1¾	2	2¼	2½	2¾	3	3¼	3½	4	4½	5	6
TINNED ...... EACH	.60	.60	.60	.65	.70	.80	.90	1.00	1.05	1.15	1.22	1.40	1.60	1.75	2.10
BLACK .... EACH	.50	.50	.50	.50	.50	.50	.50	.55	.60	.65	.70	.80	.90	1.00	1.20

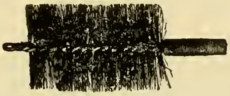


FIG. 525. RICE STEEL WIRE CLEANER.

RICE STEEL WIRE TUBE CLEANERS.—FIG. 525.

SIZE	1	1¼	1½	1¾	2	2¼	2½	2¾	3	3¼	3½	4	4½	5	6
EACH	.50	.50	.50	.50	.50	.50	.50	.55	.60	.65	.70	.80	.90	1.00	1.20

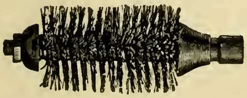


FIG. 526. STEEL WIRE TUBE CLEANER, 1 1-2 TO 9 INCHES.

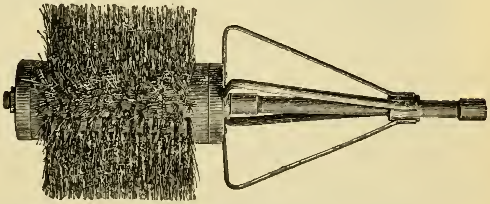


FIG. 527. STEEL WIRE FLUE BRUSH, 10 TO 36 INCHES

FIG. 526	Steel Wire Tube Cleaner, 2 inches and smaller .... Per inch	.55
FIG. 527	Steel Wire Flue Brush .... Per inch	.55

TOOLS.

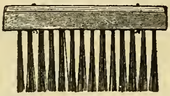


FIG. 528. COMMON FOUNDRY BRUSH.

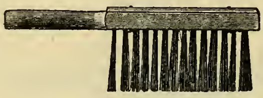


FIG. 529. HANDLED FOUNDRY BRUSH.

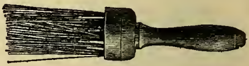


FIG. 530. ROUND FOUNDRY BRUSH.

FOUNDRY BRUSHES.—FIGS. 528 AND 529.

NO. OF ROWS	4	4	4	4	5	5	5	5	5
LENGTH OF WIRE	2½	3	4	5	2½	3	4	5	6
FIG. 528 PER DOZ.	2.00	2.17	2.50	2.84	2.46	2.67	3.09	3.50	3.92
FIG. 529 PER DOZ.	2.25	2.42	2.75	3.09	2.71	2.92	3.34	3.75	4.17

ROUND FOUNDRY BRUSHES.—FIG. 530.

Per dozen, $2.75.

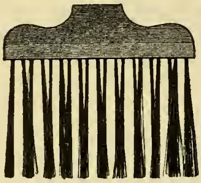


FIG. 531. UPRIGHT BROOM.

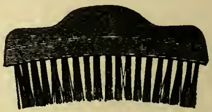


FIG. 532. BOILER BROOM.

WIRE BROOMS.—FIGS. 531 AND 532.

FIG. 531	Upright Brooms . . . . Per dozen	7.50
FIG. 532	Boiler Brooms . . . . Per dozen	9.50

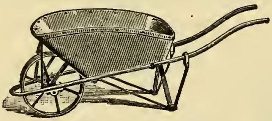


FIG. 535. COAL BARROW.

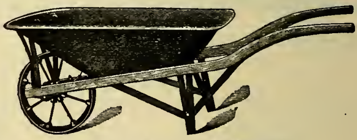


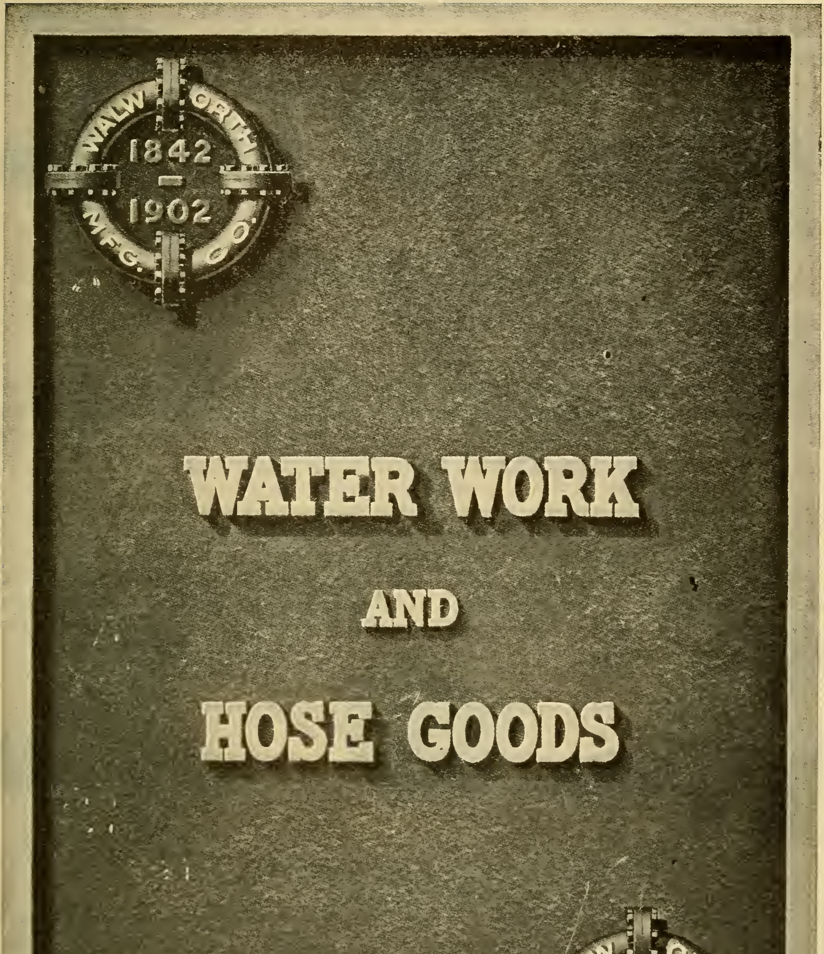
FIG. 536. STEEL COAL BARROW

COAL BARROWS.—FIG. 535.

SIZE	A	B	C	D	D2	E
CAPACITY COAL POUNDS	325	400	260	300	350	4 Bush Coke
WEIGHT POUNDS	135	145	135	98		126
EACH	26.00	29.00	26.00	18.00	20.00	28.00
TRAYS EACH	14.00	16.00	14.00	9.00	11.00	15.00

STEEL COAL BARROWS.—FIG. 536.

NO.	1	2	3
CAPACITY COAL POUNDS	200	250	325
WEIGHT POUNDS	65	70	80
EACH	14.50	16.00	18.00
TRAYS EACH	8.00	9.00	10.00



WALWORTH MFG. CO.
1842
–
1902

WATER WORK
AND
HOSE GOODS

WALWORTH MFG. CO.
1842
–
1902

WATER WORK.

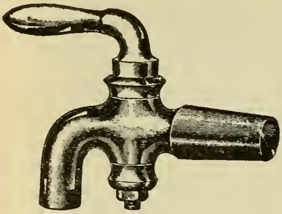


FIG. 537. FOR LEAD PIPE.

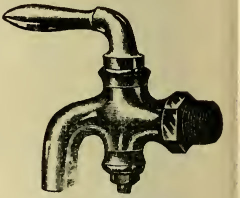


FIG. 538. FOR IRON PIPE.

LEVER-HANDLE PLAIN BIBBS.—FIG. 537.

FOR LEAD PIPE.

SIZE	¼	⅜	½	⅝	¾	1	1¼	1½	2
FIG. 537. ROUGH PER DOZ.	12.00	14.00	16.00	19.00	26.00	37.00	60.00	90.00	180.00
FIG. 537. FINISHED PER DOZ.	13.50	15.50	18.00	21.50	29.00	41.00	70.00	110.00	210.00

LEVER-HANDLE PLAIN BIBBS.—FIG. 538.

FOR IRON PIPE.

SIZE	¼	⅜	½	⅝	¾	1	1¼	1½	2
FIG. 538. ROUGH PER DOZ.	12.00	14.00	16.00	19.00	26.00	37.00	60.00	90.00	180.00
FIG. 538. FINISHED PER DOZ.	13.50	15.50	18.00	21.50	29.00	41.00	70.00	110.00	210.00

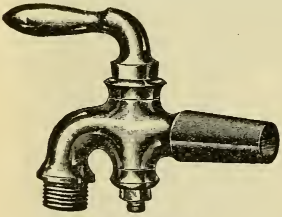


FIG. 539. FOR LEAD PIPE.

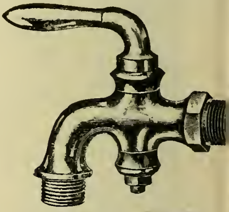


FIG. 540. FOR IRON PIPE.

LEVER-HANDLE HOSE BIBBS.—FIG. 539.

FOR LEAD PIPE.

SIZE	½	⅝	¾	1	1¼	1½	2
FIG. 539. ROUGH PER DOZ.	18.00	21.00	29.00	42.00	66.00	98.00	195.0
FIG. 539. FINISHED PER DOZ.	20.00	23.50	32.00	46.00	76.00	118.00	225.0

LEVER-HANDLE HOSE BIBBS.—FIG. 540.

FOR IRON PIPE.

SIZE	½	⅝	¾	1	1¼	1½	2
FIG. 540. ROUGH PER DOZ.	18.00	21.00	29.00	42.00	66.00	98.00	195.00
FIG. 540. FINISHED PER DOZ.	20.00	23.50	32.00	46.00	76.00	118.00	225.00

WATER WORK.

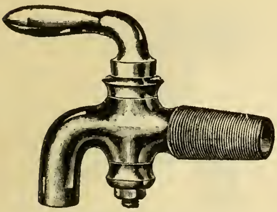


FIG. 541 FOR WOOD.

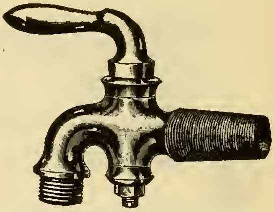


FIG. 542. FOR WOOD AND HOSE.

LEVER-HANDLE PLAIN BIBBS.—FIG. 541.

FOR WOOD.

SIZE	¼	⅜	½	⅝	¾	1	1¼	1½	2
FIG. 541. ROUGH PER DOZ.	....	15.00	18.00	22.00	30.00	43.00	68.00	100.00	200.00
FIG. 541. FINISHED PER DOZ.	14.50	16.50	20.00	24.50	33.00	47.00	78.00	120.00	230.00

LEVER-HANDLE HOSE BIBBS.—FIG. 542.

FOR WOOD.

SIZE	½	⅝	¾	1	1¼	1½	2
FIG. 542. ROUGH PER DOZ.	20.00	24.00	33.00	48.00	74.00	108.00	....
FIG. 542. FINISHED PER DOZ.	22.00	26.50	36.00	52.00	84.00	128.00	....

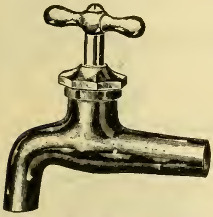


FIG. 543. FOR LEAD PIPE.

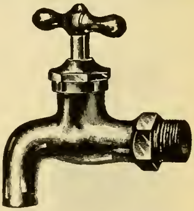


FIG. 544. FOR IRON PIPE.

COMPRESSION PLAIN BIBBS.—FIG. 543.

FOR LEAD PIPE.

SIZE	⅜	½	⅝	¾	1	1¼	1½	2
FIG. 543. FINISHED PER DOZ.	12.00	13.00	16.00	20.00	40.00			
FIG. 543. NICKEL PLATED PER DOZ.	14.00	15.50	18.50	22.50	43.00	....	....	....

COMPRESSION PLAIN BIBBS.—FIG. 544.

FOR IRON PIPE.

SIZE	⅜	½	⅝	¾	1	1¼	1½	2
FIG. 544. FINISHED PER DOZ.	12.00	13.00	16.00	20.00	40.00	65.00		
FIG. 544. NICKEL PLATED PER DOZ.	14.00	15.50	18.50	22.50	43.00	69.00	....	....

WATER WORK.

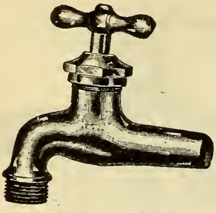


FIG. 545. FOR LEAD PIPE.

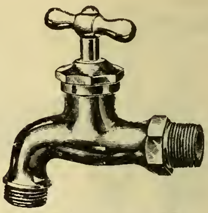


FIG. 546. FOR IRON PIPE.

COMPRESSION HOSE BIBBS.—FIG. 545.

FOR LEAD PIPE.

SIZE	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{5}{8}$	$\frac{3}{4}$	1
FIG. 545. FINISHED ....PER DOZ.	14.00	15.00	18.00	22.00	43.00
FIG. 545 NICKEL PLATED..... ....PER DOZ.	16.00	17.50	20.50	24.50	46.00

COMPRESSION HOSE BIBBS.—FIG 546

FOR IRON PIPE.

SIZE..	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{5}{8}$	$\frac{3}{4}$	1	$1\frac{1}{4}$
FIG. 546. FINISHED . ...PER DOZ.	14.00	15.00	18.00	22.00	43.00	69.00
FIG. 546. NICKEL PLATED..............PER DOZ.	16.00	17.50	20.50	24.50	46.00	73.00

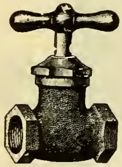


FIG. 547. FOR IRON PIPE.

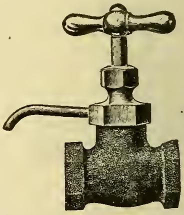


FIG. 548. FOR IRON PIPE WITH WASTE.

COMPRESSION STOPS.—FIG. 547

FOR IRON PIPE.

SIZE	$\frac{1}{2}$	$\frac{5}{8}$	$\frac{3}{4}$	1
FIG. 547. ROUGH ....PER DOZ.	13.50	16.00	23.00	39.00

COMPRESSION STOPS AND WASTES.—FIG. 548

FOR IRON PIPE

SIZE..............................	$\frac{1}{2}$	$\frac{3}{4}$	1
FIG. 548. ROUGH ... .PER DOZ.	18.50	31.00	52.00

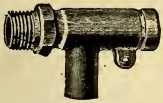


FIG. 649. WARD & CURLEY BALL COCK.

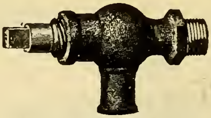


FIG. 550. COMPRESSION BALL COCK.

WARD & CURLEY BALL COCKS.—FIG. 549.

SIZE	½	¾	1	1	1¼	1¼	1½	2
DIAMETER COPPER BALL	6	7	8	10	8	10	10	12
COMPLETE EACH	1.25	2.00	4.00	4.80	5.50	6.30	8.00	16.00

COMPRESSION BALL COCKS.—FIG. 550.

FOR IRON PIPE.

SIZE	½	¾	1	1¼	1½	2	2½	3	4
FIG. 550. ROUGH PER DOZ.	12.00	19.00	33.00	50.00	96.00	144.00	180.00	240.00	360.00

COPPER BALLS.—FIG. 550 A.

WITH RODS AND SQUARES.

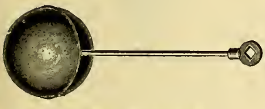


FIG. 550 A. COPPER BALL.

SIZE	5	6	7	8	10	12	14	20
EACH	.75	.84	1.00	1.42	3.00	3.50	11.00	22.00

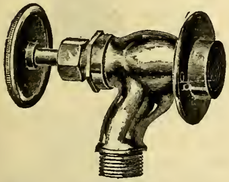


FIG. 551. COMPRESSION SILL COCK.

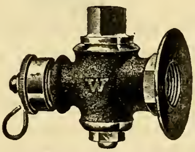


FIG. 552. PLUG SILL COCK.

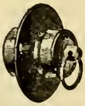


FIG. 553. HOUSE CONNECTION.

SILL COCKS.—FIGS. 551, 552, AND 553.

SIZE	½	¾	1
FIG. 551. FINISHED PER DOZ.	28.00	28.00	45.00
FIG. 551. NICKEL PLATED PER DOZ.	31.00	31.00	49.00
FIG. 552. ROUGH PER DOZ.	24.00	28.00	....
FIG. 553. FINISHED PER DOZ.	9.00	9.00	14.00
FIG. 553. NICKEL PLATED PER DOZ.	10.50	10.50	16.00

WATER WORK.

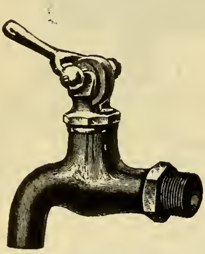


FIG. 556.
BROUGHTON'S SELF-CLOSING BIBB.

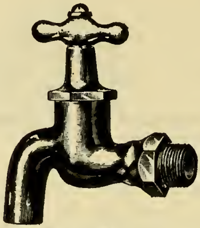


FIG. 557.
ZANE'S SELF-CLOSING BIBB.

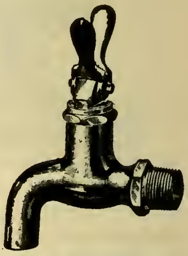


FIG. 558.
DOHERTY'S SELF-CLOSING BIBB.

SELF-CLOSING PLAIN BIBBS.—FIGS. 556, 557, AND 558.

FOR IRON PIPE.

SIZE	⅜	½	⅝	¾	1
FIG. 556. FINISHED ... PER DOZ.	28.00	28.00	31.00	34.00	......
FIG. 556. NICKEL PLATED ... PER DOZ.	31.00	31.00	34.00	37.00	78.00
FIG. 557. FINISHED ... PER DOZ.	26.00	27.00	30.00	37.00	60.00
FIG. 557. NICKEL PLATED ... PER DOZ.	32.00	33.00	36.00	44.00	70.00
FIG. 558. FINISHED ... PER DOZ.	......	27.00	30.00	37.00	60.00
FIG. 558. NICKEL PLATED ... PER DOZ.	......	33.00	36.00	44.00	70.00

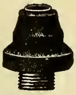


FIG. 562. PIPE OR TEE SHIELD.

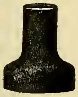


FIG. 563. COMPRESSION BIBB SHIELD.

FIG. 564. PLUG BIBB SHIELD.

MILLER'S PATENT SHIELDS FOR SEALING COCKS, ETC.

These shields can be applied to ends of pipes, to fittings, cocks, or other fixtures, and the opening can then be sealed, so that if tampered with detection is insured. Fig. 562 shows style adapted for use on the end of an iron pipe, tee, or other fitting. Fig. 563 is for use on a compression bibb, the handle having first been removed and the shield fastened with the handle screw. Fig. 564 is for use on a lever-handled bibb, the handle having first been removed.

SIZE OF FITTING OR BIBB	½	¾
FIG. 562. ROUGH ... EACH	.40	.50
FIG. 562. FINISHED ... EACH	.50	.60
FIG. 563. ROUGH ... EACH	.35	.45
FIG. 563. FINISHED ... EACH	.45	.55
FIG. 564. ROUGH ... EACH	.35	.35
FIG. 564. FINISHED ... EACH	.45	.45

WATER WORK.

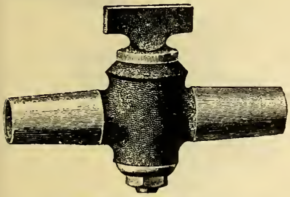


FIG. 565. WITH TEE HANDLE.

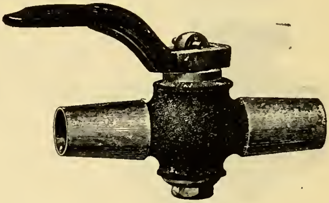


FIG. 566. WITH LEVER HANDLE.

TEE AND LEVER HANDLE STOP COCKS.—FIGS. 565 AND 566.

FOR LEAD PIPE.

SIZE	⅜	½	⅝	¾	1	1¼
FIG. 565 PER DOZ.	19.00	21.00	27.00	32.00	54.00	84.00
FIG. 566 PER DOZ.	19.00	21.00	27.00	32.00	54.00	84.00

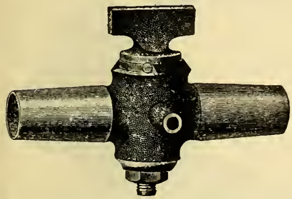


FIG. 567. WITH TEE HANDLE.

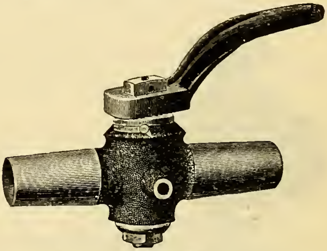


FIG. 568. WITH LEVER HANDLE.

TEE AND LEVER HANDLE STOP AND WASTE COCKS.—FIGS. 567 AND 568.

FOR LEAD PIPE.

SIZE	⅜	½	⅝	¾	1	1¼
FIG. 567 PER DOZ.	21.00	23.00	29.00	34.00	57.00	88.00
FIG. 568 PER DOZ.	21.00	23.00	29.00	34.00	57.00	88.00

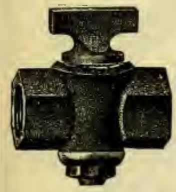


FIG. 569. WITH TEE HANDLE.

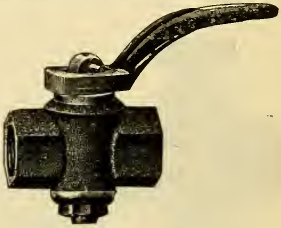


FIG. 570. WITH LEVER HANDLE.

TEE AND LEVER HANDLE STOP COCKS.—FIGS. 569 AND 570.

FOR IRON PIPE.

SIZE	⅜	½	¾	1	1¼	1½	2
FIG. 569 PER DOZ.	17.50	18.00	26.50	44.00	70.00	98.00	185.00
FIG. 570 PER DOZ.	17.50	18.00	26.50	44.00	70.00	98.00	185.00

WATER WORK.

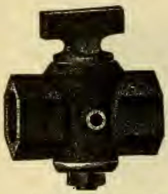


FIG. 571. WITH TEE HANDLE.

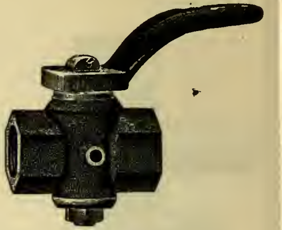


FIG 572 WITH LEVER HANDLE

TEE AND LEVER HANDLE STOP AND WASTE COCKS — FIGS 571 AND 572.

FOR IRON PIPE.

SIZE	⅜	½	¾	1	1¼	1½	2
FIG. 571 ... PER DOZ.	19.50	20.00	28.50	47.00	74.00	104.00	195.00
FIG. 572 ... PER DOZ.	19.50	20.00	28.50	47.00	74.00	104.00	195.00

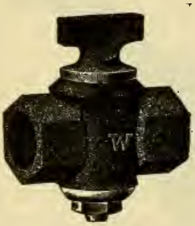


FIG. 573. WITH TEE HANDLE.

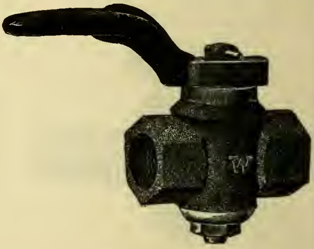


FIG 574 WITH LEVER HANDLE

TEE AND LEVER HANDLE STOP COCKS. — FIGS 573 AND 574

NEWPORT PATTERN — FOR IRON PIPE

SIZE	½	¾	1 x ¾	1	1¼	1½	2
FIGS. 573 & 574, PER DOZ.	20.00	29.50	44.00	52.00	82.00	116.00	220.00

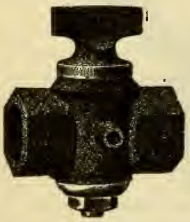


FIG 575. WITH TEE HANDLE.

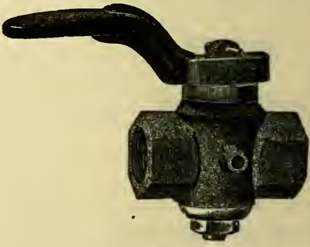


FIG 576 WITH LEVER HANDLE.

TEE AND LEVER HANDLE STOP AND WASTE COCKS. — FIGS 575 AND 576

NEWPORT PATTERN — FOR IRON PIPE

SIZE	½	¾	1 x ¾	1	1¼	1½	2
FIGS. 575 & 576, PER DOZ.	22.00	31.50	47.00	55.00	86.00	122.00	230.00

WATER WORK.

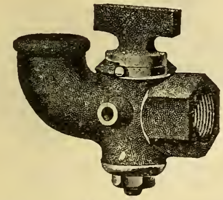


FIG. 577. TEE HANDLE HYDRANT COCK, I. P.

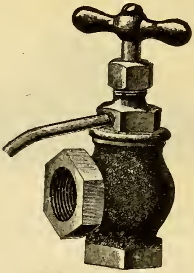


FIG. 578. HALL'S WASTE VALVE.

TEE HANDLE HYDRANT COCKS.—FIG. 577.

FOR IRON PIPE.

SIZE	½	¾	1
FIG. 577 PER DOZ.	25.00	37.50	61.00

HALL'S TEE HANDLE ANGLE WASTE VALVE.—FIG. 578.

SIZE	½	¾	1	1¼	1½	2
FIG. 578 PER DOZ.	21.00	24.00	34.50	39.00	45.00	57.00

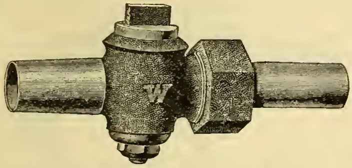


FIG. 579. CORPORATION COCK TO SOLDER.

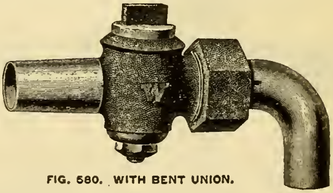


FIG. 580. WITH BENT UNION.

CORPORATION COCKS TO SOLDER.—FIGS. 579 AND 580.

SIZE	⅜	½	⅝	¾	1	1¼
FIGS. 579 AND 580 PER DOZ.		18.00	22.00	32.00	50.00	100.00

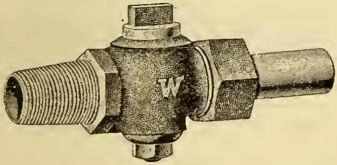


FIG. 581. CORPORATION COCK, I. P.

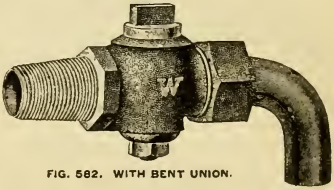


FIG. 582. WITH BENT UNION.

SIZE	⅜	½	⅝	¾	1	1¼	1½	2
FIGS. 581 AND 582 PER DOZ.	16.00	19.00	23.00	34.00	53.00	104.00	136.00	210.00

WATER WORK.

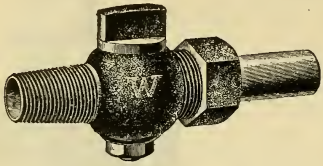


FIG. 582A. CORPORATION STOP, STRAIGHT UNION.

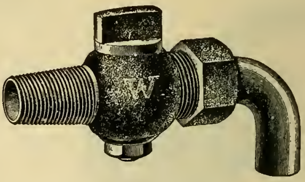


FIG. 582B. WITH BENT UNION.
(Bent Unions of any degree of curve furnished.)

ROUND BODY CORPORATION COCK.—FIGS. 582A AND 582B.

SIZE	½	⅝	¾	1	1¼
FIGS. 582 A AND 582 B, PER DOZ.	24.00	28.00	39.00	58.00	90.00

THE above cuts illustrate our round body pattern of Corporation Stops. This stop is heavier than our old style stop, Fig. 581 or 582, and is preferred by many water companies on account of its extra weight, and the fact that the round body increases the strength of the tapping and union ends. We thread or square the inside of the union end, when required, to adapt this stop for use with tapping machines other than the "Hall."

Special care is taken to properly grind in the plugs of all our Corporation Stops.

We furnish this stop with square on tapping end, if desired, like Fig. 581.

NOTE.—In ordering Corporation Stops from your dealer or jobber, always specify the "WALWORTH," and say for what machine they are wanted.

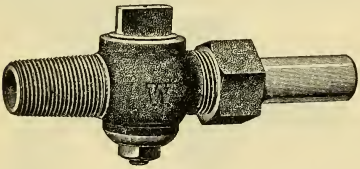


FIG 582C. THE "N.B." CORPORATION STOP, STRAIGHT UNION.

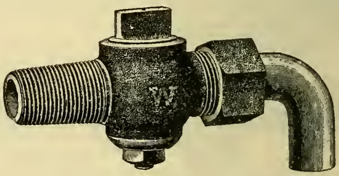


FIG. 582D. THE "N.B." WITH BENT UNION.
(Bent Unions of any degree of curve furnished.)

"N. B." CORPORATION COCKS.—FIG. 582C AND 582D.

SIZE	½	⅝	¾	1	1¼	1½	2
FIGS. 582 C AND 582 D, PER DOZ.	27.00	34.00	48.00	58.00	90.00	141.00	270.00

The above cuts illustrate our new "N.B." pattern of Corporation Stop. This stop is designed to entirely do away with the necessity heretofore existing, of making special patterns of stops to meet the requirements of those water works superintendents who have realized the questionable quality of this class of work ordinarily offered them.

It is our intention to *only* furnish this pattern in *special composition, consisting of forty parts refined copper, three and one-half parts tin, one and one-half parts zinc, and one part lead*, unless otherwise ordered.

After these stops are put together, and the plugs ground in, we pass a twist drill of suitable size through each stop from end to end, in order to insure a perfect water way.

All "N.B." Stops are tested to 250 pounds per square inch.

We particularly request water works superintendents who want the best corporation stop in the market, to write us for a sample of the "N.B."

We thread or square the inside of union end to adapt these stops for use with machines other than the "Hall."

We furnish this Stop with square on tapping end, if desired, like Fig. 581.

NOTE—In ordering Corporation Stops from your dealer or jobber, always specify the "WALWORTH," and say for what machine they are wanted.

WATER WORK.

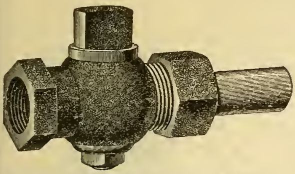


FIG. 583. CORPORATION COCK, FEMALE, I. P.

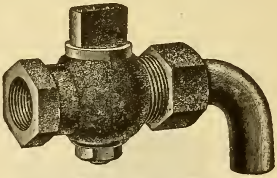


FIG. 584. WITH BENT UNION.

CORPORATION COCKS.—FIGS. 583 AND 584.

SIZE	⅜	½	⅝	¾	1	1¼	1½	2
FIGS. 583 AND 584, PER DOZ.	16.00	19.00	23.00	34.00	53.00	104.00	136.00	210.00

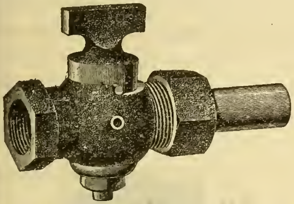


FIG. 586. TEE-HANDLED STOP AND WASTE COCK, WITH UNION.

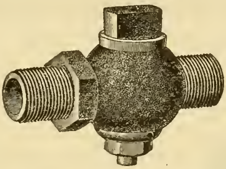


FIG. 588. CORPORATION COCK, MALE ENDS.

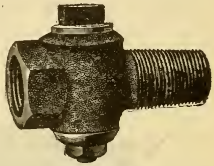


FIG. 587. CORPORATION COCK, MALE AND FEMALE.

CORPORATION COCKS.—FIGS. 585, 586, AND 587.

SIZE	⅜	½	⅝	¾	1	1¼	1½	2
FIG. 585 PER DOZ.	17.00	20.00	24.00	35.50	55.00	107.00	140.00	222.00
FIG. 586 PER DOZ.	13.00	16.00	20.00	29.00	46.00	90.00	..	....
FIG. 587 PER DOZ.	....	16.00	...	29.00	46.00	....	...	...

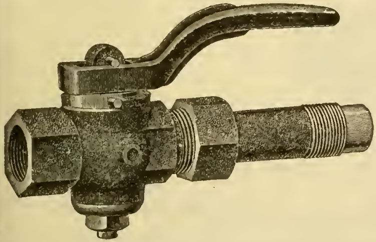


FIG. 588. FITCHBURG PATTERN STOP AND WASTE COCK.

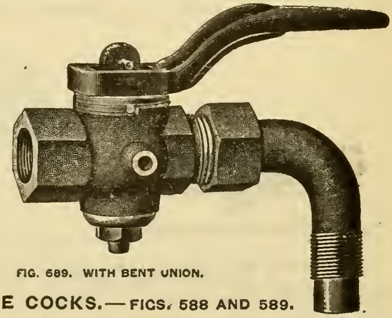


FIG. 589. WITH BENT UNION.

FITCHBURG PATTERN STOP AND WASTE COCKS.—FIGS. 588 AND 589.

SIZE	¾	1 x ¾	1
FIGS. 588 AND 589 PER DOZ.	36.00	40.00	50.00

WATER WORK.

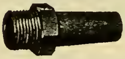


FIG. 590. SOLDERING NIPPLE, MALE.

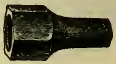


FIG. 591. SOLDERING NIPPLE, FEMALE.

SOLDERING NIPPLES.—FIGS. 590 AND 591.

SIZE	¼	⅜	½	¾	1	1¼	1½	2	2½	3
PER DOZ.	2.25	2.75	3.50	5.00	6.50	10.00	12.50	18.00	32.00	46.00

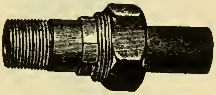


FIG. 592. SOLDERING UNION MALE.
HEAVY, WITH MALE I. P. THREAD.

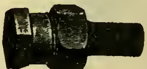


FIG. 593. SOLDERING UNION, FEMALE.
HEAVY, WITH FEMALE I. P. THREAD.

SOLDERING UNIONS.—FIGS. 592 AND 593.

SIZE	½	¾	1	1¼	1½	2
FIG. 592.....PER DOZ. FIG. 593.....PER DOZ.	7.75	12.00	14.50	22.00	27.50	42.00

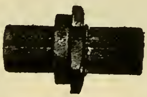


FIG. 594. PLAIN SOLDERING COUPLING.

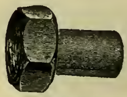


FIG 595. PLAIN SOLDERING UNION.

SOLDERING UNIONS AND COUPLINGS.—FIGS. 594 AND 595.

SIZE	½	¾	1	1¼	1½	2
FIG. 594.......PER DOZ.	5.25	8.00	11.00	14 25	18.00	27.00
FIG. 595.......PER DOZ.	4.50	6.00	8.00	12.00	15.00	21.00

WATER WORK.

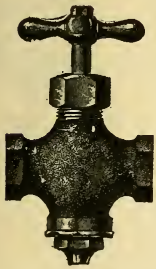


FIG. 595 A.
GORHAM STOP AND WASTE COCK.

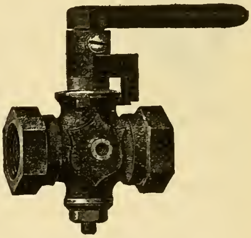


FIG. 596 1-2.
GLAUBER STOP AND WASTE COCK.

GORHAM STOP AND WASTE COCKS.—FIG. 595 A.

SIZE	½	¾	1	1¼
FOR IRON PIPE PER DOZ.	20.00	24.00	30.00	48.00
UNION CONNECTION EXTRA PER DOZ.	1.25	1.75	2.25	3.00
SOCKETS AND HANDLES FOR (1-8 PIPE) RODS PER SET	.25	.25	.25	.25

GLAUBER STOP AND WASTE COCKS.—FIG. 595 1-2.

SIZE	½	⅝	¾	1
FOR IRON PIPE, FLAT WAY PER DOZ.	19.00	24.00	28.00	41.00

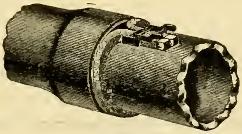


FIG. 595 B. ASBESTOS LEAD JOINT RUNNERS.

ASBESTOS LEAD JOINT RUNNERS.—FIG. 595 B.

NO	1	2	3	4	5	6	7	8	9	10	11	12	13
SIZE SQUARE	¾	¾	1	1	1¼	1¼	1¼	1¼	1¼	1¼	1¼	1¼	1¼
FOR PIPE SIZE	2-3-4	4-5-6	6-8-10	10-12-14	6-8-10	10-12-14	16-18-20	24	30	36	40	42	48
EACH	1.25	1.50	2.25	3.00	4.00	5.00	6.75	7 75	8 75	9.75	10.75	11.25	12.50

HOSE GOODS.

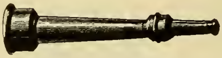


FIG. 596. SCREW TIP HOSE PIPE.

SCREW TIP HOSE PIPES.—FIG. 596.

SIZE	¾ x 8	¾ x 12	1 x 8	1 x 12	1¼ x 12	1¼ x 15	1½ x 12	1½ x 15
PER DOZ.	8.00	10.00	10.00	12.00	20.00	24.00	25.00	30.00

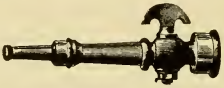


FIG. 597. HOSE PIPE WITH COCK.

HOSE PIPES WITH COCKS.—FIG. 597

SIZE	¾ x 8	¾ x 12	1 x 8	1 x 12	1¼ x 12	1¼ x 15	1½ x 12	1½ x 15
PER DOZ.	13.00	18.00	15.00	20.00	40.00	45.00	55.00	60.00

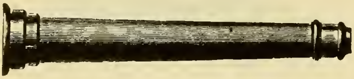


FIG. 598. EXTRA HEAVY HOSE PIPE, SOLID TIP.

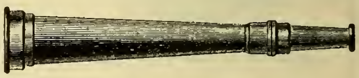


FIG. 599. EXTRA HEAVY HOSE PIPE, SCREW TIP.

EXTRA HEAVY HOSE PIPES.—FIG. 598.

SIZE	2 x 17	2 x 20	2½ x 17	2½ x 20
EACH	2.33	2.67	2.33	2.67

EXTRA HEAVY HOSE PIPES, SCREW TIPS.—FIG. 599.

SIZE	2 x 20	2 x 24	2 x 30	2 x 36	2½ x 20	2½ x 24	2½ x 30	2½ x 36
EACH	3.67	4.33	4.67	5.00	3.67	4.33	4.67	5.00

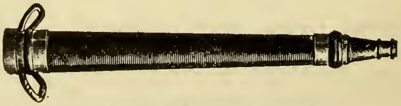


FIG. 600. UNDERWRITER'S HOSE PIPE.

UNDERWRITER'S HOSE PIPES.—FIG. 600.

Size, 2½ x 30 inches long. Each, $8.34.

Screw nozzle, swivel handle, wound and painted.

HOSE GOODS.

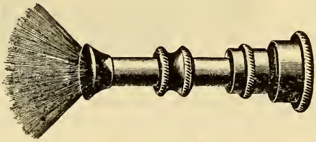


FIG. 603. GEM SPRAY PIPE.

GEM SPRAY PIPES.—FIG. 603.

¾ inch Brass	Per doz., 10.00
1 inch Brass	Per doz., 12.00

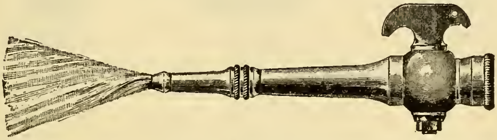


FIG. 606. MAGIC HOSE PIPE.

MAGIC HOSE PIPES.—FIG. 606.

¾ inch Brass	Per doz., 9.00

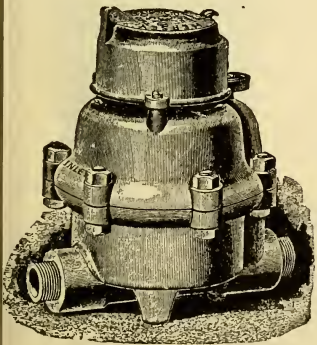


FIG. 606 A. HERSEY DISC WATER METER.

HERSEY DISC WATER METERS.—FIG. 606 A.

SIZE	½ or ⅝	¾	1	1½	2	3	4	6
CAPACITY, GALLONS	15	30	60	90	150	270	540	900
EACH	10.00	15.00	20.00	37.50	62.50	112.50	218.75	468.75
CONNECTIONS EXTRA	.50	.75	1.00	....	....	....	....	....

HOSE GOODS.

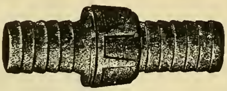


FIG. 607. HOSE COUPLING.

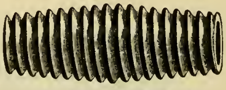


FIG. 608. HOSE MENDER.

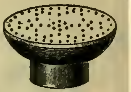


FIG. 609.
HOSE SPRINKLER.

HOSE COUPLINGS, MENDERS, AND SPRINKLERS.—FIGS. 607, 608, AND 609.

SIZE	½	¾	1	1¼	1½	2	2½	3
FIG. 607 .... EACH	.20	.20	.37	.83	1.17	2.20	4.00	6.34
FIG. 608 .... PER CROSS	8.00	8.00	10.00	....	....	....	....	....
FIG. 609 ¾" THREAD ...... EACH	....	....	....	....	.29	.38	.50	.60

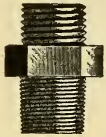


FIG. 610.
HOSE NIPPLE.

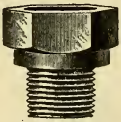


FIG. 611.
HOSE REDUCER.

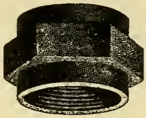


FIG. 612.
HOSE CAP.

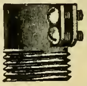


FIG. 613.
HOSE BIBB END.

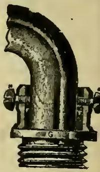


FIG. 614.
HOSE BIBB END.

HOSE NIPPLES, REDUCERS, AND CAPS.—FIGS. 610, 611, AND 612.

SIZE	½	¾	1	1¼	1½	2	2½	3
FIG. 610 .... EACH	.30	.30	.42	.75	.83	1.17	2.33	3.33
FIG. 611 .... EACH	....	....	.55	.84	1.00	1.50	....	....
FIG. 612 .... EACH	.40	.40	.50	.75	1.00	1.75	2.50	...

HOSE BIBB ENDS.—FIGS. 613 AND 614.

SIZE	7/16	½	9/16	⅝	11/16	¾	13/16	⅞	15/16
FIG. 613 .... PER DOZ.	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50
FIG. 614 .... PER DOZ.	2.75	2.75	2.75	2.75	2.75	2.75	2.75	2.75	2.75

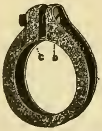


FIG. 615. HOSE CLAMP.

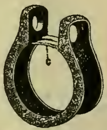


FIG. 615. HOSE CLAMP, OPEN.

HOSE CLAMPS.—FIG. 615.

SIZE	½	¾	1	1¼	1½	2	2½	3
FOR HYDRANT HOSE .... PER DOZ.	1.50	1.50	2.00	2.50	3.00	4.00	7.00	10.00
FOR STEAM HOSE .... PER DOZ.	1.50	2.00	2.50	3.00	3.50	5.50	8.50	13.00

Three or four ply same price.

HOSE GOODS.

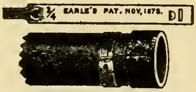

¾ EARLE'S PAT. NOV. 1875.

FIG. 616. EARLE'S HOSE BAND.

EARLE'S HOSE BANDS.—FIG. 616.

SIZE	½	¾	1	1¼	1½	1¾	2	2¼	2½
PER DOZEN	.40	.60	.80	1.00	1.20	1.40	1.60	1.80	2.00
VISE CLAMPS PER DOZ.	6.00	6.00	6.00	9.00	9.00	9.00	9.00	..	....
HAND CLAMPS	15.00	15.00	15.00	15.00	15.00	15.00	15.00	....	....

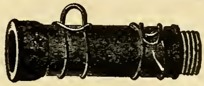


FIG. 617. CALDWELL HOSE STRAP.

CALDWELL'S HOSE STRAPS.—FIG. 617.

No. 2, ½ inch, 3⅜ inch long per doz.	$ .24
No. 4, ½ inch, 3¾ inch long per doz.	.24
No. 6, ¾ inch, 4⅛ inch long per doz.	.24
No. 8, ¾ inch, 4¾ inch long per doz.	.24
No. 10, 1 inch, 5 inch long per doz.	.80
No. 12, 1 inch, 5⅜ inch long per doz.	.80
No. 14, 1¼ inch, 6 inch long per doz.	1.00
No. 16, 1¼ inch, 6⅜ inch long per doz.	1.00
No. 18, 1½ inch, 6¾ inch long per doz.	1.20
No. 20, 1½ inch, 7⅛ inch long per doz.	$1.20
No. 22, 1¾ inch, 7½ inch long per doz.	1.40
No. 24, 1¾ inch, 8 inch long per doz.	1.40
No. 26, 2 inch, 8½ inch long per doz.	1.60
No. 28, 2 inch, 9 inch long per doz.	1.60
No. 30, 2¼ inch, 9½ inch long per doz.	1.80
No. 32, 2¼ inch, 10 inch long per doz.	1.80
No. 34, 2½ inch, 10½ inch long per doz.	2.00
No. 36, 2½ inch, 11 inch long per doz.	2.00

Caldwell's Strap Fasteners, ½ to 1 inch, each 50 cents; 1¼ to 2½ inch, 75 cents.

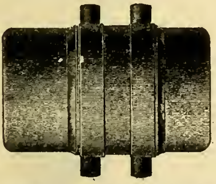


FIG. 618. NE PLUS HOSE COUPLING.

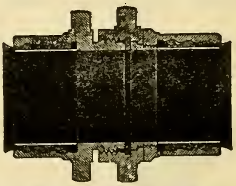


FIG. 618. SECTIONAL VIEW.

NE PLUS HOSE COUPLINGS.—FIG. 618.

SIZE	1	1¼	1½	2	2¼	2½
PER SET	1.33	1.67	1.67	2.33	2.67	3.00

Attaching Tools, 1¼ and 1½ inch per set	$6.00
Attaching Tools, 2 and 2½ inch per set	10.00

FILTERS.

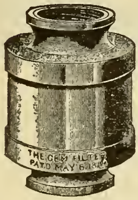


FIG. 619. GEM FILTER NO. 4. IMPROVED.

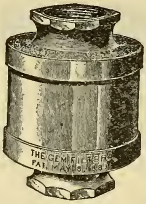


FIG. 620. GEM FILTER NO. 5.

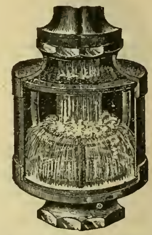


FIG. 620. SECTIONAL VIEW.

GEM FILTERS.—FIGS. 619 AND 620.

DESCRIPTION.	Nickel Plated.
FIG. 619. No. 4 .... PER DOZ.	12.00
FIG. 620. No. 5 .... PER DOZ.	14.00

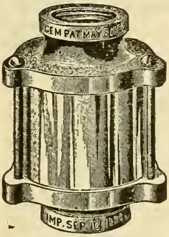


FIG. 621. GLASS GEM FILTER.

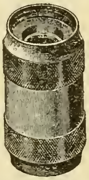


FIG. 621 A. ELLIS FILTER.

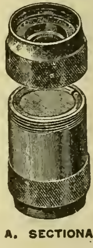


FIG. 621 A. SECTIONAL VIEW.

GEM AND ELLIS FILTERS.—FIGS. 621 AND 621A.

DESCRIPTION.	Nickel Plated.
FIG. 621. GLASS GEM FILTER .... PER DOZ.	12.00
FIG. 621A. ELLIS FILTER .... PER DOZ.	12.00

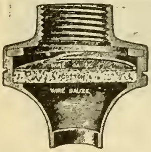


FIG. 623. "COMMON SENSE" FILTER.

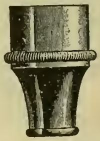


FIG. 624. CROTON FILTER.

"COMMON SENSE" AND CROTON FILTERS.—FIGS. 623 AND 624.

DESCRIPTION.	Nickel Plated	Brass.
FIG. 623. "COMMON SENSE" FILTERS .... PER DOZ.	8.50	
FIG. 624. CROTON FILTERS .... PER DOZ.	4.20	3.75

LAWN SPRINKLERS.

LAWN SPRINKLERS.—FIGS. 626 AND 627.

FIG. 626, "CHAMPION," .... PER DOZEN	15.00
FIG. 627, "GLOBE," .. .. PER DOZEN	15.00

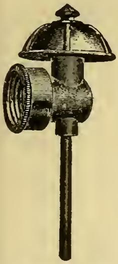


FIG. 626, CHAMPION LAWN SPRINKLER.

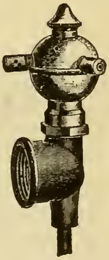


FIG. 627, GLOBE LAWN SPRINKLER.

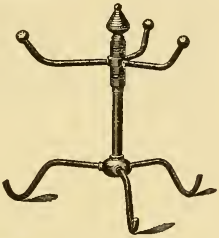


FIG. 628 1-2. NOERA LAWN SPRINKLER.

LAWN SPRINKLERS. — FIG. 628 1-2.

Noera Lawn Sprinklers, Nickel Plated .... Each, $2.50.

IMPROVED LAWN SPRINKLERS.—FIGS. 630 AND 631.

NO. 1, 4 ARM,	NICKEL PLATED..EACH	5.85
NO. 2, 6 ARM,	NICKEL PLATED..EACH	6.85
NO. 5, 8 ARM,	NICKEL PLATED..EACH	7.35

All our Sprinklers are fitted for one half and three quarter inch Hose.

N. B.—Both half inch and three quarter inch Hose always have same size coupling.

The Solid Ball Cap is for use in place of the Spray Jet when there is a light pressure of water, and to give greater velocity to the revolving Arms. The use of the Spray Jet instead of Solid Ball Cap requires more water and produces a better effect.

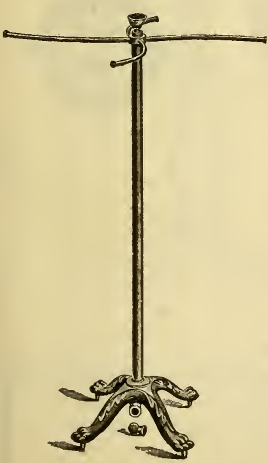


FIG. 630, 4 ARM SPRINKLER.

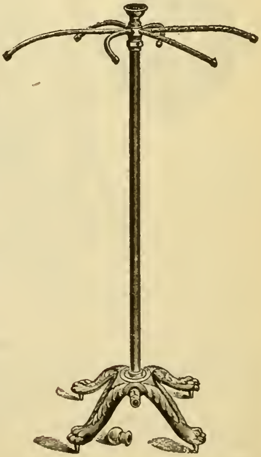


FIG. 631, 6 ARM SPRINKLER.

HOSE REELS.

Patented May 13th, 1884.

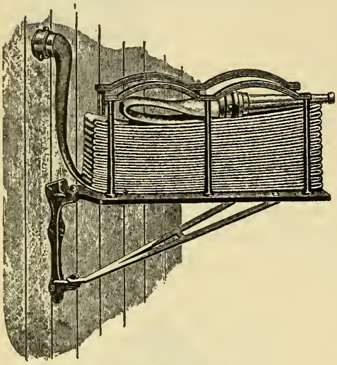


FIG. 633. SWINGING HOSE RACK.

SWINGING HOSE RACKS.—FIG. 633.

No.		Price.
0	For 50 ft., 1½ or 2 in., Plain Linen	5.00
00	„ 50 „ 2½ in., „ „	5.00
1	„ 100 „ 1½ or 2 in., „ „	6.00
2	„ 100 „ 2½ in., „ „	6.00
3	„ 150 „ 1½ or 2 in. „ „	7.00
4	„ 150 „ 2½ in., „ „	7.00
3	„ 50 „ 1½ or 2 in., Lined Linen or Mill	7.00
4	„ 50 „ 2½ in., „ „ „	7.00
5	„ 100 „ 1½ or 2 in., „ „ „	7.50
6	„ 100 „ 2½ in , „ „ „	8.00

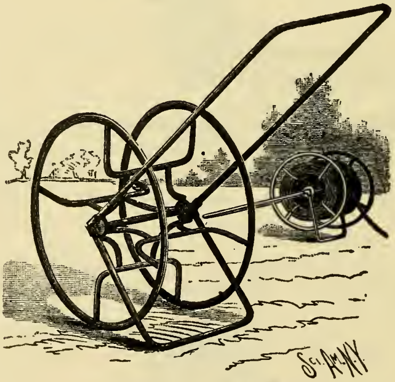


FIG. 634. ALL IRON HOSE REEL.

Small cut represents position of Reel when rolling up hose.

ALL IRON HOSE REELS.—FIG. 634

No.	Height of Wheel. Inches.	Weight. Pounds.	Capacity ¾ Hose. Feet.	Price.
NO. 10	21	18	100	3.50
NO. 20	24	22	150	4.00

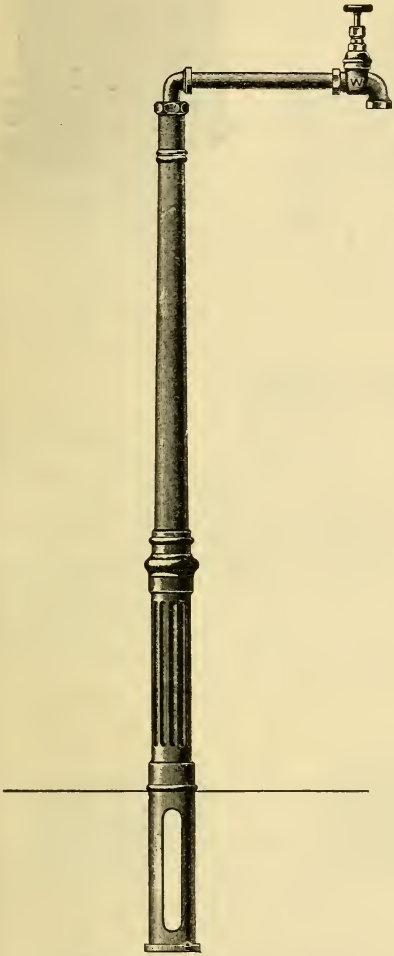


FIG. 634 A. STAND PIPE FOR WATER CARTS.

STAND-PIPE FOR WATER CARTS.

FIG. 634 A.

WITH SWIVEL ELBOW.

This Stand-pipe has swivel elbow, permitting the arm to be swung back over the sidewalk. The post is ornamental, making it particularly desirable for boulevards and park systems. Posts are 12 ft. in height and go 4 ft. in ground, and are fitted for 2 in. pipe.

Circulars on application.

	Each.
Stand-pipe with swivel elbow . .	30.00
Swivel elbow only	11.50
Elbow gate valve, 2 in. . .	8.20

No pipe included on above lists.

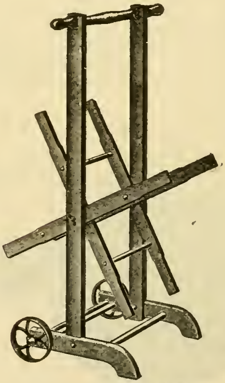


FIG. 635. WOODEN HOSE REEL.

WOODEN HOSE REEL.—FIG. 635.

No.	Capacity.	Each.
NO. 1	100 feet ¾ Rubber Hose	.80

HOSE.

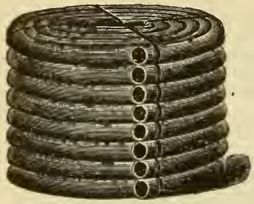


FIG. 636. RUBBER HOSE.

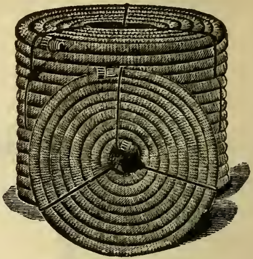


FIG. 637 COTTON HOSE.

RUBBER HOSE.—FIG. 636.

SIZE	½	¾	1	1¼	1½	2	2¼	2½	3	4
TWO PLY PER FOOT	.20	.25	.33	.42	.50	.66	.75	.83	.99	1.32
THREE PLY PER FOOT	.25	.30	.40	.50	.60	.80	.90	1.00	1.20	1.60
FOUR PLY PER FOOT	.30	.37	.50	.62	.75	1.00	1.12	1.25	1.50	2.00

Five and six ply hose made to order at an advance of twenty-five and fifty per cent. on four-ply prices.

STEAM AND BREWERS' HOSE.

SIZE	½	¾	1	1¼	1½	2	2½	3
FOUR PLY PER FOOT	.51	.67	.83	1.04	1.25	1.66	2.08	2.80
FIVE PLY PER FOOT	.63	.83	1.03	1.30	1.56	2.07	2.60	3.50
SIX PLY PER FOOT	.76	1.00	1.24	1.56	1.87	2.49	3.12	4.20

SUCTION HOSE.

SIZE	¾	1	1¼	1½	2	2½	3	3½	4	4½	5	6	7	8	9	10	12
PER FOOT	.77	1.00	1.25	1.65	2.50	3.10	4.00	4.90	5.80	6.70	7.60	9.50	12.00	15.00	17.50	20.00	25.00

COTTON HOSE. RUBBER LINED.—FIG. 637.

SIZE	½	¾	1	1¼	1½	2	2½
PER FOOT							

On 1-2, 3-4 and 1 inch the price includes couplings for each fifty feet length.

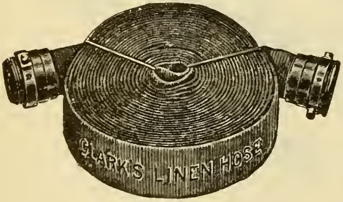


FIG. 638. CLARK'S LINEN HOSE.

CLARK'S LINEN HOSE.—FIG. 638.

SIZE	1¼	1½	2	2¼	2½
UNLINED PER FOOT	.33	.35	.40	.46	.50
RUBBER LINED PER FOOT	.60	.70	.80	.90	.95

EUREKA "TRADE" LINEN HOSE.

SIZE	1	1¼	1½	2	2¼	2½	3
UNLINED PER FOOT	.15	18	.20	.24	.26	.28	.40
RUBBER LINED PER FOOT	...	.45	.50	.55	.60	.65	....

Eureka Unlined Linen Hose in lengths of one hundred feet Eureka Rubber Lined Linen Hose in lengths of fifty feet.

STEAM PACKING.

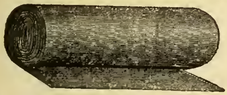


FIG. 639. SHEET PACKING.

Cloth Insertion.

Sizes, 1/64, 1/32, 1/16, 3/32, 1/8, 3/16.

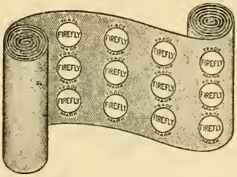


FIG. 639 A. BESTOSKING SHEET PACKING.

Copper Wire Insertion.

Sizes, 1/32, 1/16, 1/8, 3/16.

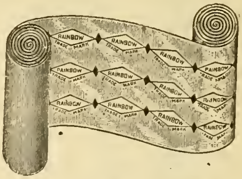


FIG 639 B. RAINBOW SHEET PACKING.

Sizes, 1/32, 1/16, 3/32, 1/8, 3/16, 1/4, 3/8, 1/2.

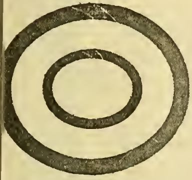


FIG. 639 C. BESTOSKING MANHOLE AND HANDHOLE GASKETS. 4-PLY.

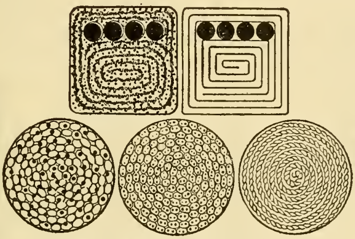


FIG. 639 D. BESTOSKING ROD PACKING.

Square and Round. Plain.
Gum Core. Wire Insertion.

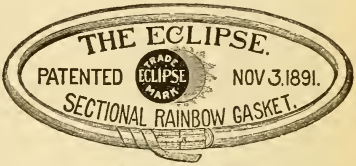

THE ECLIPSE.
PATENTED
TRADE ECLIPSE MARK
NOV 3.1891.
SECTIONAL RAINBOW GASKET.

FIG. 639 E. ECLIPSE GASKETS

Sizes	3/8,	1/2,	5/8,	3/4.
Length in Box,	36,	36,	24,	18.
Weight, lbs.,	3 1/4,	5 1/4,	6,	5 3/4.

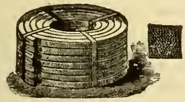


FIG. 640. SQUARE PISTON PACKING.

Sizes, 1/4, 3/8, 1/2, 5/8, 3/4, 7/8, 1, 1 1/8, 1 1/4, 1 1/2.

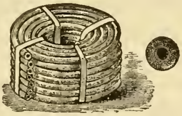


FIG. 641. ROUND PISTON PACKING.

Sizes, 1/4, 3/8, 1/2, 5/8, 3/4, 7/8, 1, 1 1/8, 1 1/4, 1 1/2.

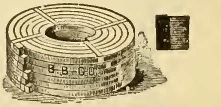


FIG. 642. RUBBER BACK PISTON PACKING

Sizes, 1/4, 3/8, 1/2, 5/8, 3/4, 1, 1 1/8, 1 1/4, 1 1/2.

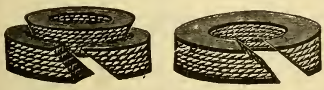


FIG. 642 A. REVERE RING PACKING.

Give Exact Measures of Rod and Box in Ordering.

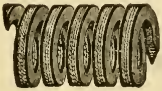


FIG. 642 B. REVERE SPIRAL PACKING.

Sizes up to 2".

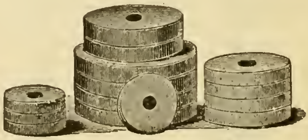


FIG. 644. PUMP VALVES.

STEAM PACKING, ETC.

AMERICAN Round Packing, in coils	Per lb.	
ANDERSON'S Ring Packing	Per lb.	
BESTOSKING Mill Board, in sheets	Per lb.	
BESTOSKING Sheet Packing, Firefly Brand	Per lb.	
BESTOSKING Wick Packing, ¼ pound balls	Per lb.	
CANVAS Covering, in rolls	Per lb.	
EMPIRE Gum Core Packing, square, round, or oval	Per lb.	
EUREKA Gum Core Packing, square, round, or oval	Per lb.	
FLAX Packing, square, in boxes	Per lb.	
FLAX Skeins	Per lb.	
HEMP Packing, in coils	Per lb.	
JUTE Packing, in coils	Per lb.	
KNOWLTON'S Ring Packing	Per lb.	
LAMP Wick Packing, 12 balls to pound	Per lb.	
MINERAL Wool, in bags	Per lb.	
SELDEN'S Packing, in coils	Per lb.	
VULCABESTON Rope Packing, on spools	Per lb.	

MAGNESIA COVERINGS.

FOR PIPE.			FOR FITTINGS.			
Inside Diameter of Pipe	Weight of Covering per Lineal Foot.	Price Per Lineal Foot, Canvas-Jacketed.	Elbows and 45° Elbows.	Tees	Globe Valves.	Crosses.
¾ inch	9 ozs.	$ .16	$ .20	$ .24	$ .36	$ .32
1 inch.	10 ozs	.18	.20	.24	.36	.32
1¼ inch.	12 ozs.	.20	.20	.24	.36	.32
1½ inch	15 ozs.	.22	.20	.24	.36	.32
2 inch.	18 ozs.	.24	.24	.28	.40	.36
2½ inch.	20 ozs.	.27	.28	.32	.52	.40
3 inch.	24 ozs.	.30	.32	.36	.64	.44
3½ inch.	26 ozs.	.34	.36	.40	.80	.52
4 inch.	30 ozs.	.38	.40	.48	1.00	.60
4½ inch.	38 ozs.	.42	.48	.60	1.20	.72
5 inch.	44 ozs.	.46	.60	.80	1.40	.96
6 inch.	48 ozs	.50	.80	1.00	1.68	1.28
7 inch.	55 ozs.	.55	1.00	1.20	2.00	1.60
8 inch.	65 ozs.	.60	1.32	1.60	2.40	2.20
9 inch.	75 ozs.	.65	1.66	2.00		2.60
10 inch.	85 ozs.	.75	2.00	2.40		3.00

The sections are 36 inches in length. A sufficient number of fastenings furnished without additional charge. Sold in full sections only.

By use of these fittings much time may be saved in the application of the covering, and a much neater finish to the work attained. In case of a valve fitting, the stem can be removed and packed without removing the covering.

COTTON WASTE.

Best quality of Cop and Picked Waste in 100 lb., 50 lb., and 25 lb. Bales.

HAIR FELT.

½ and ¾ and 1″ in stock, in rolls of 300 square feet, 3 ft. and 6 ft. wide.

GOULD'S RING PACKING.

Diameter of Stuffing Box.	Price per Inch of Depth of Stuffing Box.	Diameter of Stuffing Box.	Price per Inch of Depth of Stuffing Box.
¾	.12	3	.45
1	12	3¼	.50
1¼	.15	3½	.55
1½	.18	3¾	.60
1¾	.20	4	.65
2	.25	4¼	.70
2¼	.30	4½	.75
2½	.35	4¾	80
2¾	.40	5	.85

CHESTERTON'S RING PACKING.

Diameter of Stuffing Box.	Price per Inch of Depth of Stuffing Box.	Diameter of Stuffing Box.	Price per Inch of Depth of Stuffing Box
¾	.15	3	.50
1	.15	3¼	.55
1¼	.20	3½	.60
1½	.25	3¾	.70
1¾	.28	4	.80
2	.30	4¼	.90
2¼	.35	4½	1.00
2½	.40	4¾	1.10
2¾	.45	5	1.20

Chesterton's Spiral Packing, per lb., $1.20.

SERVICE BOXES AND HYDRANTS.

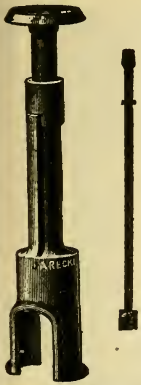


FIG. 645. JARECKI'S SERVICE BOX.

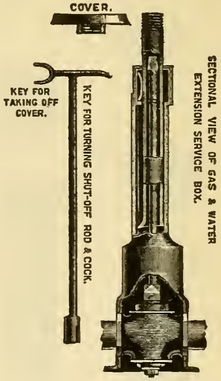

COVER.
KEY FOR TAKING OFF COVER.
KEY FOR TURNING SHUT-OFF ROD & COCK.
SECTIONAL VIEW OF GAS & WATER EXTENSION SERVICE BOX.

FIG. 645. SECTIONAL VIEW.

JARECKI'S EXTENSION SERVICE BOXES.—FIG. 645

FOR WATER OR GAS.

NO.	11	12	13	27	28	29	43	44	45
SIZE COCKS	½ and ¾	½ and ¾	½ and ¾	¾ and 1	¾ and 1	¾ and 1	1¼ and 1½	1¼ and 1½	1¼ and 1½
EXTENDS FROM	45	50	55	45	50	55	45	50	55
EXTENDS TO	61	66	72	61	66	72	61	66	72
EACH	1.25	1.25	1.30	1.25	1.25	1.30	1.25	1.25	1.30

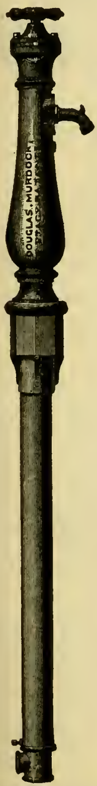


FIG. 646 DOUGLAS' HYDRANT

DOUGLAS' HYDRANTS AND STREET WASHERS.

FIGS. 646 AND 647.

To go in Ground	FIG. 646.		FIG. 647.	
	¾ inch.	1 inch.	¾ inch.	1 inch.
30 INCHES.....EACH	9.75	12.25	....	....
36 INCHES.....EACH	10.00	12.50	7.00	9.00
42 INCHES.....EACH	10.25	12.75	7.25	9.25
48 INCHES.....EACH	10.50	13.00	7.50	9.50
60 INCHES.....EACH	11.50	14.00	8.00	10.00
72 INCHES.....EACH	12.50	15.00	8.50	10.50

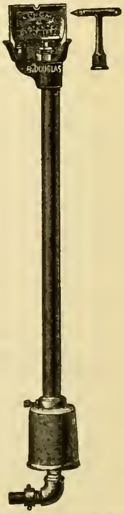


FIG. 647 DOUGLAS' STREET WASHER.

SERVICE BOXES.

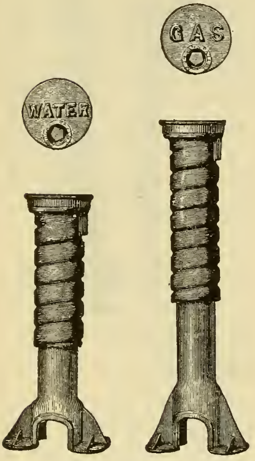


FIG. 648.

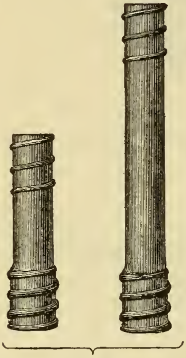


FIG. 649.

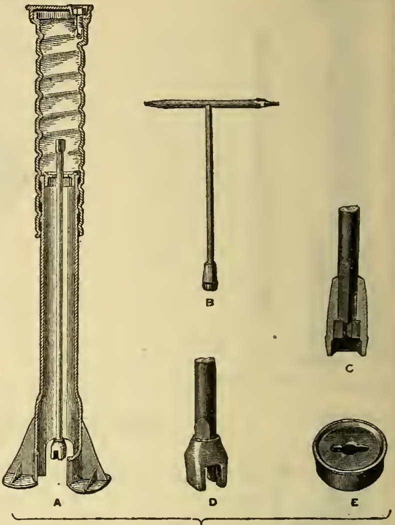


FIG. 650.

EXTENSION SERVICE BOXES.—FIG. 648.

2 1-2 INCH INSIDE DIAMETER.

NO.		89*a*	90*b*	91*c*	92*c*	92*d*	93*d*	93*e*	94*d*	94*e*	95*e*	100*e*	100*f*	100*fx*
EXTENDS	FROM INCHES	12	18	21	24	24	36	36	42	42	48	54	54	78
	TO INCHES	20	26	33	38	42	48	54	57	60	66	72	78	102
EACH		.90	.95	1.00	1.03	1.05	1.10	1.15	1.20	1.25	1.35	1.45	1.50	1.90

EXTENSION SECTIONS.—FIG. 649.

NO	151	152	153
INCREASES LENGTH OF BOX....INCHES	9	16½	28
EACH	.32	.36	.45

STATIONARY ROD ATTACHMENT.—FIG. 650.

This attachment can be applied to all lengths of boxes.

Water and gas companies often desire a stationary rod in their service boxes extending to within 12 or 18 inches of the surface, thus doing away with the old style long key for closing and opening the service cock.

Fig. A. Shows sectional view of box with stationary rod attachment.
Fig. B. Combination Key.
Fig. C. Sectional view of Combination Key.
Fig. D. Fork end of rod connecting to service cock.
Fig. E. Patent guide ring for keeping rod in centre of box.

For Stationary Rod Attachment, add to price of Box 25 cents.

SERVICE BOXES.

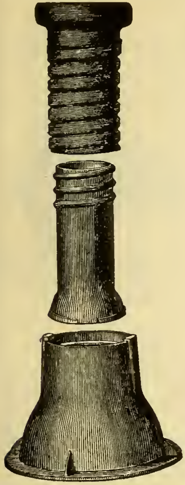
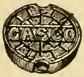
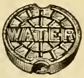


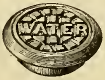
FIG. 651 VALVE BOXES.



NO. 68.



NO. 69.



NO. 255.

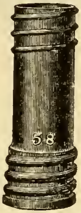


FIG. 652. EXTENSION SECTION.

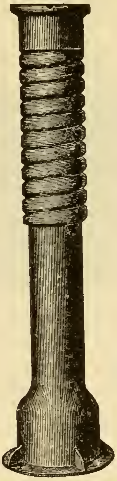
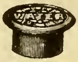
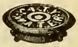


FIG. 653. ROADWAY BOX.



NO. 109.



NO. 110.

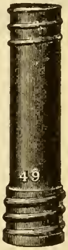


FIG. 654. EXTENSION SECTION.

EXTENSION VALVE BOXES.—FIG. 651.

5 1-2 INSIDE DIAMETER WITH NO. 6 BASE.

NO.	AAA	AA	A	B	C	CC	D	DD	E	F	G	H
EXTENDS FROM	17	22	28	36	42	48	42	48	60	60	72	72
EXTENDS TO	17	28	40	48	54	60	65	72	72	84	84	96
EACH	2.95	3.35	3.50	3.65	3.80	4.00	4.15	4.35	4.50	4.65	4.85	5.10

Customers in ordering will please specify what style of cover is wanted, either 68, 69, or 255.
Extra Valve Box Covers, each 42 cents.

VALVE BOX EXTENSION SECTION.—FIG. 652.

Will increase length of box 14 inches. ....Each $0.80

DESCRIPTION OF VALVE BOX BASES:

No. of Base.	Style of Base.	Inside Diameter at Bottom.	Height.	For Valves.	Increases Length of Box	Decreases Length of Box	Increases Cost of Box	Decreases Cost of Box.
No. 4.	Round.	10⅞"	8"	4" and smaller	....	3"	. . .	.25
No. 6.	Round.	15"	11"	8" and smaller. round top.	. . .	....	...	....
No. 8.	Round.	17¼"	11"	10" and smaller, round top.	...	....	....	....
No. 16.	Round.	24"	15¼"	12 or 16" round top.	4⅜"	...	1.25	....
*No. 140.	Round.	....	10½"	24" and smaller, round or oval top.	....	6"	....	....
No. 160.	Oval.	21" x 12½"	9½"	16" and smaller	...	1½"	.50	....
No. 162.	Oval.	26" x 16"	10½"	20" and smaller.	....	1"	1.50	....

* This Base has a flange 17" square on the bottom, and is especially adapted for use where valves are set near the surface.

ROUND HEAD ROADWAY BOXES.—FIG. 653.

4 1-4 INCH INSIDE DIAMETER, 7 INCH INSIDE DIAMETER AT BASE.

NO.	41*q*	42*q*	42*r*	43*r*	44*r*	45*r*
EXTENDS FROM	18 to 24	27 to 34	27 to 42	34 to 48	39 to 54	46 to 60
EACH	2.10	2.25	2.45	2.55	2.65	2.75

ROADWAY BOX EXTENSION SECTION.—FIG. 654.

Will increase length of box 18 inches........ ....Each $0.75

SINKS.

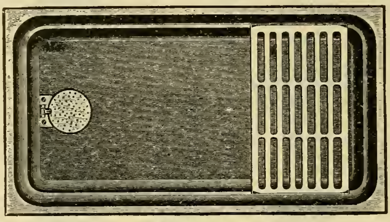


FIG. 655. MAGEE'S SINK.

MAGEE'S SINKS.—FIG. 655.

Size.	Plain. Each.	Galvanized Dish Rack.	Size.	Plain. Each.	Galvanized Dish Rack.
18 x 24 x 5 IN. DEEP ...	2.50	.60	23 x 48 x 6 IN. DEEP	5.00	.80
18 x 30 x 5 IN. DEEP	3.00	.60	23 x 54 x 6 IN. DEEP	6.50	.80
20 x 36 x 5 IN. DEEP	3.50	.60	23 x 60 x 6 IN. DEEP	8.25	.80
22 x 42 x 6 IN. DEEP	4.00	.70	23 x 72 x 6 IN. DEEP ..	11.50	.80

FIRE HYDRANTS.

LUDLOW FIRE HYDRANTS.—FIG. 659.

STANDARD LENGTH, 5 FEET IN GROUND.

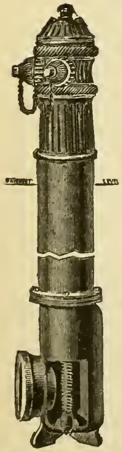
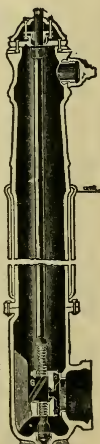


FIG. 659. LUDLOW FIRE HYDRANT.

Diameter of Pipe Connection	2	3 or 4	3 or 4	6	6	6	6	8
DIAMETER STAND PIPE	3	4⅝	5¾	5¾	6¼	7	8	8
DIAMETER SEAT RING	2	3	4	4	4½	5	6	6
ONE 2 in. NOZZLE	17.00	..	....	....	...	....	....	....
ONE 2½ in. NOZZLE	...	28.00	31.00	31.50	....	....	...	.
TWO 2½ in. NOZZLES	....	..	33.00	33.50	35.50	40.50	50.00	51.25
THREE 2½ in. NOZZLES	....	...	....	....	37.50	42.50	52.00	53.25
FOUR 2½ in. NOZZLES	....	....	....	....	...	44.50	54.00	55.25
ONE STEAMER NOZZLE	...	....	33.00	33.50	35.50	40.50	50.00	51.25
One Steamer, and one 2½ in. Nozzle	....	.	35.00	35.50	37.50	42.50	52.00	53.25
One Steamer, and two 2½ in. Nozzles	...	....	37.00	37.50	39.50	44.50	54.00	55.25
EXTRA LENGTH PER FOOT	.90	1.20	1.50	1.50	1.60	1.70	2.00	2.00
FROST CASE	....	4.50	5.00	5.00	5.60	6.50	7.50	7.50
EXTRA LENGTH FROST CASE	....	...88	1.00	1.00	1.16	1.40	1.80	1.80
INDEPENDENT NOZZLE GATE --	....	....	3.50	3.50	3.50	3.75	3.75	3.75



MILL HYDRANTS.

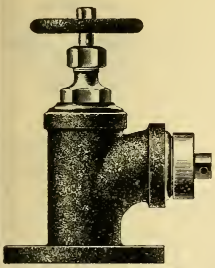


FIG. 660. MILL HYDRANT.
SINGLE DISCHARGE.

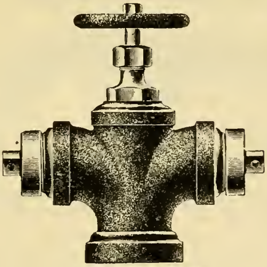


FIG. 661. MILL HYDRANT
DOUBLE DISCHARGE.

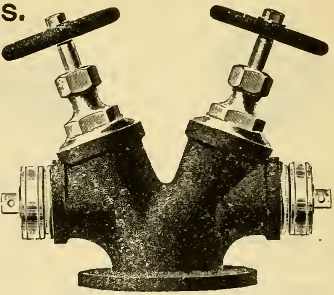


FIG. 662. MILL HYDRANT.
DOUBLE VALVE.

MILL HYDRANTS.—FIGS. 660, 661, AND 662.

	Inlet.	Outlet.	Each.
FIG. 660. SCREWED OR FLANGED	2½	2½	14.50
FIG. 660. SCREWED OR FLANGED	3	2½	13.00
FIG. 661. SCREWED OR FLANGED	2½	2½	17.50
FIG. 661. SCREWED OR FLANGED	3	2½	18.75
FIG. 662. SCREWED OR FLANGED	4	2½	22.50

Diameter of Bottom Flanges, 2½″ x 7½″, 3″ x 7½″, 4″ x 8″

INDICATOR POSTS.

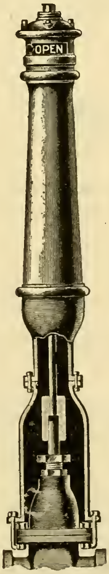


FIG 662 A. INDICATOR POST.

INDICATOR POSTS.—FIG. 662 A.

Designed especially for use with Water Valves connected with Fire Service, in Mill and Factory Yards, etc.

Each..$36.00

SOIL PIPE AND FITTINGS.

FIG. 664. SINGLE HUB SOIL PIPE.

SINGLE HUB SOIL PIPE.—FIG. 664.

SIZE	2	3	4	5	6	8	10	12
STANDARD PER FOOT	.24	.32	.40	.60	.70	1.25	2.00	3.00
EXTRA HEAVY PER FOOT	.35	.65	.80	1.15	1.30	2.25	3.00	4.00
WEIGHT PER FOOT, STANDARD LBS.	3	4½	6½	8½	10	18	25	30
WEIGHT PER FOOT, EXTRA HEAVY LBS.	5½	9½	13	17	20	33½	45	54

Sizes up to and including 10″ in 5 ft. lengths; 12″ 6 ft. lengths.

FIG. 665. DOUBLE HUB SOIL PIPE.

DOUBLE HUB SOIL PIPE.—FIG. 665.

SIZE	2	3	4	5	6	8
STANDARD WEIGHT PER FOOT	.30	.38	.46	.70	.85	1.45
EXTRA HEAVY PER FOOT	.41	.71	.86	1.25	1.45	2.55

In 5 ft. lengths.

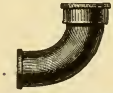


FIG. 666. QUARTER BEND.

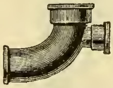


FIG. 667. WITH HEEL OUTLET.

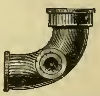


FIG. 668. WITH SIDE OUTLET.

QUARTER BENDS.—FIG. 666.

SIZE	2	3	4	5	6	8	10	12
STANDARD EACH	.40	.65	.80	1.50	2.00	3.00	4.00	6.00
EXTRA HEAVY EACH	.50	.95	1.15	2.00	2.75	4.00	5.00	8.00

QUARTER BENDS, WITH HEEL OUTLET.—FIG. 667.

SIZE	2		3		4		5		6		8		10	
	Stan'd.	Ex.H'y.	Stan'd.	Ex.H'y.	Stan'd.	Ex.H'y.	Stan'd.	Ex.H'y.	Stan'd.	Ex.H'y.	Stan'd.	Ex.H'y.	Stan'd.	Ex.H'y.
WITH 2″ OUTLET	.90	1.00	1.15	1.45	1.35	1.65	2.00	2.50	2.50	3.25	....	....	....	....
WITH 3″ OUTLET	....	....	....	....	1.45	1.75	2.10	2.60	2.60	3.35	....	....	....	....
WITH 4″ OUTLET	....	....	....	....	....	....	....	....	2.75	3.50	3.75	4.75	4.75	5.75

QUARTER BENDS, WITH SIDE OUTLET.—FIG. 668.

SIZE	2		3		4		5		6		8		10	
	Stan'd.	Ex.H'y.	Stan'd.	Ex.H'y.	Stan'd.	Ex.H'y.	Stan'd.	Ex.H'y.	Stan'd.	Ex.H'y.	Stan'd.	Ex.H'y.	Stan d.	Ex.H'y.
WITH 2″ OUTLET	1.40	1.50	1.65	1.95	1.85	2.15	2.50	3.00	3.00	3.75	....	....	....	....
WITH 3″ OUTLET	....	....	....	....	2.10	2.40	2.75	3.25	3.25	4.00	....	....	....	....
WITH 4″ OUTLET	....	....	....	....	....	....	....	....	3.50	4.25	....	....	....	....

SOIL PIPE FITTINGS.

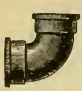


FIG. 669.
DOUBLE HUB QUARTER BEND.

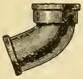


FIG. 670.
SIXTH BEND.

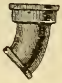


FIG. 671.
EIGHTH BEND.

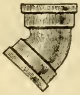


FIG. 672.
EIGHTH BEND, DOUBLE HUB.

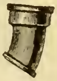


FIG. 673
SIXTEENTH BEND.

DOUBLE HUB QUARTER BENDS.—FIG. 669.

SIZE	2	3	4	5	6
STANDARD EACH	.70	.95	1.10	2.00	2.50
EXTRA HEAVY EACH	.80	1.25	1.45	2.50	3.25

SIXTH BENDS.—FIG. 670.

SIZE	2	3	4	5	6	8
STANDARD EACH	.40	.65	.80	1.50	2.00	3.00
EXTRA HEAVY EACH	.50	.95	1.15	2.00	2.75	4.00

EIGHTH BENDS.—FIG. 671.

SIZE	2	3	4	5	6	8	10	12
STANDARD EACH	.40	.65	.80	1.50	2.00	3.00	4.00	6.00
EXTRA HEAVY EACH	.50	.95	1.15	2.00	2.75	4.00	5.00	8.00

EIGHTH BENDS AND SIXTEENTH DOUBLE HUBS.—FIG. 672.

Size, 2 inch. Standard..........Each, $ .70 Extra heavy.........Each, $ .80
Size, 4 inch. Standard..........Each, 1.10 Extra heavy.........Each, 1.45

SIXTEENTH BENDS.—FIG. 673.

SIZE	2	3	4	5	6	8	10	12
STANDARD EACH	.40	.65	.80	1.50	2.00	3.00	4.00	6.00
EXTRA HEAVY EACH	.50	.95	1.15	2.00	2.75	4.00	5.00	8.00

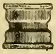


FIG. 674. DOUBLE HUB.

FIG. 676. STRAIGHT SLEEVE.

DOUBLE HUBS.—FIG. 674.

SIZE	2	3	4	5	6	8	10
STANDARD EACH	.30	.55	.70	1.00	1.20	2.50	3.50
EXTRA HEAVY EACH	.45	.70	.85	1.35	1.60	3 50	4.50

STRAIGHT SLEEVES.

SIZE	2	3	4	5	6	8
STANDARD EACH	.30	.55	.70	1.00	1.20	2.50
EXTRA HEAVY EACH	.45	.70	.85	1.35	1.60	3.50

SOIL PIPE FITTINGS.

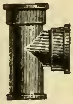


FIG. 676. T BRANCH.

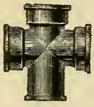


FIG. 677. CROSS.

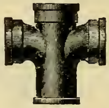


FIG. 679. SANITARY CROSS.

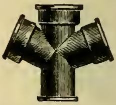


FIG. 679, A. DOUBLE HALF Y BRANCH.

T BRANCHES.—FIG. 676.

SIZE	2 x 2	3 x 2	3 x 3	4 x 2	4 x 3	4 x 4	5 x 2	5 x 3	5 x 4
STANDARD .... EACH	.60	.90	1.00	1.20	1.30	1.40	1.70	1.80	1.90
EXTRA HEAVY .... EACH	.80	1.30	1.40	1.60	1.70	1.80	2.60	2.70	2.80
SIZE	5 x 5	6 x 2	6 x 3	6 x 4	6 x 5	6 x 6	8 x 8 to 8 x 2	10 x 10 to 10 x 2	
STANDARD .... EACH	2.00	2.50	2.60	2.70	2.80	2.90	5.00	7.00	....
EXTRA HEAVY .... EACH	2.90	3.50	3.60	3.70	3.80	3.90	8.00	11.00	....

CROSS HEAD BRANCHES.—FIG. 677.

SIZE	2 x 2	3 x 2	3 x 3	4 x 2	4 x 3	4 x 4	5 x 2	5 x 3	5 x 4
STANDARD .... EACH	1.00	1.35	1.50	1.50	1.65	1.80	2.25	2.40	2.55
EXTRA HEAVY .... EACH	1.25	1.75	1.90	1.95	2.10	2.25	3.05	3.20	3.35
SIZE	5 x 5	6 x 2	6 x 3	6 x 4	6 x 5	6 x 6	8 x 8 to 8 x 2	10 x 10 to 10 x 2	..
STANDARD .... EACH	2.70	2.90	3.05	3.20	3.35	3.50	6.00	....	....
EXTRA HEAVY .... EACH	3.50	3.90	4.05	4.20	4.35	4.50	9.00	....	....

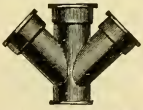


FIG. 679 B. DOUBLE Y BRANCH.

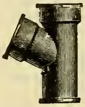


FIG. 680. HALF Y BRANCH.

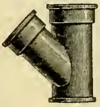


FIG. 681. Y BRANCH.

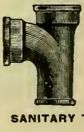


FIG. 681½. SANITARY T BRANC

SANITARY CROSSES. DOUBLE HALF Y BRANCH. DOUBLE Y BRANCH.

FIGS. 679, 679 A, 679 B.

SIZE	2 x 2	3 x 2	3 x 3	4 x 2	4 x 3	4 x 4	5 x 2	5 x 3	5 x 4
STANDARD .... EACH	1.20	1.60	1.75	1.95	2.10	2.25	2.70	2.85	3.00
EXTRA HEAVY .... EACH	1.50	2.10	2.25	2.70	2.85	3.00	3.80	3.95	4.10
SIZE	5 x 5	6 x 2	6 x 3	6 x 4	6 x 5	6 x 6	8 x 8 to 8 x 2	...	....
STANDARD .... EACH	3.15	3.50	3.65	3.80	3.95	4.10	6.00	....	....
EXTRA HEAVY .... EACH	4.25	4.90	5.05	5.20	5.35	5.50	9.00	....	....

HALF Y BRANCH. Y BRANCH. SANITARY T BRANCH.

FIGS. 680, 681, AND 681½.

SIZE	2 x 2	3 x 2	3 x 3	4 x 2	4 x 3	4 x 4	5 x 2	5 x 3	5 x 4
STANDARD .... EACH	.60	1.00	1.10	1.30	1.40	1.50	1.80	1.90	2.00
EXTRA HEAVY .... EACH	.90	1.40	1.50	1.70	1.80	1.90	2.70	2.80	2.90
SIZE	5 x 5	6 x 2	6 x 3	6 x 4	6 x 5	6 x 6	8 x 8 to 8 x 2	...	. .
STANDARD .... EACH	2.10	2.60	2.70	2.80	2.90	3.00	5.00	....	....
EXTRA HEAVY .... EACH	3.00	3.60	3.70	3.80	3.90	4.00	8.00	....	...

SOIL PIPE FITTINGS.

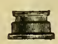


FIG. 684. SINGLE HUB.

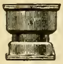


FIG. 685. REDUCER.

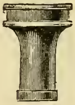


FIG. 686. INCREASER.

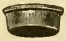


FIG. 687. PLUG

FIG. 688. THIMBLE.

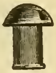


FIG. 689. VENTILATING CAP.

SINGLE HUBS.—FIG. 684.

SIZE	2	3	4	5	6	8	10	12
STANDARD EACH	.30	.50	.65	.85	1.00	2.50	3.50	
EXTRA HEAVY EACH	.40	.60	.75	1.10	1.35	3.50	4.50	

REDUCERS.—FIG. 685.

SIZE	3 x 2	4 x 2	5 x 2 5 x 3 5 x 4	6 x 2 6 x 3 6 x 4 6 x 5	8 x 2 8 x 3 8 x 4 8 x 5 8 x 6	10 x 6 10 x 8	12 x 6 12 x 8 12 x 10
STANDARD EACH	.50	.65	.85	1.00	2.50		
EXTRA HEAVY EACH	.60	.75	1.10	1.35	3.50		

INCREASERS.—FIG. 686.

SIZE	2 x 3	2 x 4	2 x 5	3 x 4	3 x 5	4 x 5	4 x 6	6 x 8
STANDARD EACH	.70	90	1.15	.90	1.15	1.15	1.25	2.00
EXTRA HEAVY EACH	1.00	1.25	1.75	1.25	1.75	1.75	2.25	5.00

PLUGS OR STOPPERS.—FIG. 687.

SIZE	2	3	4	5	6	8	10	12
STANDARD EACH	.15	.25	.30	.40	.50	1.20	2.00	
EXTRA HEAVY EACH	.25	.35	.40	.60	.75	1.50	3.00	

THIMBLES.—FIG. 688.

SIZE	2	3	4	5	6
PLAIN EACH	.15	.25	.30	.35	.45
GALVANIZED EACH	.25	.40	.50	.60	.75

VENTILATING CAPS.—FIG. 689.

SIZE	2	3	4	5	6
PLAIN EACH	.40	.60	.80	1.25	1.75
GALVANIZED EACH	.60	.80	1.25	2.50	3.50

SOIL PIPE FITTINGS.

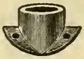


FIG. 690. T SADDLE HUB.

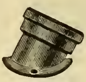


FIG 691. HALF Y SADDLE HUB

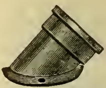


FIG. 692. Y SADDLE HUB.

T SADDLE HUBS.—FIG. 690.

SIZE	2 x 2	3 x 2	3 x 3	4 x 2	4 x 3	4 x 4	5 x 2	5 x 3
STANDARD EACH	.30	.50	.50	.60	.60	60	75	.75
EXTRA HEAVY EACH	.40	.65	.65	.80	.80	.80	1.00	1.00
SIZE	5 x 4	5 x 5	6 x 2	6 x 3	6 x 4	6 x 5	6 x 6	.
STANDARD EACH	.75	.75	1.10	1.10	1.10	1.10	1.10	....
EXTRA HEAVY EACH	1.00	1.00	1.40	1.40	1.40	1.40	1.40	....

HALF Y AND Y SADDLE HUBS.—FIGS. 691 AND 692.

SIZE	2 x 2	3 x 2	3 x 3	4 x 2	4 x 3	4 x 4	5 x 2	5 x 3
STANDARD EACH	.35	.55	.55	.70	.70	.70	.90	.90
EXTRA HEAVY EACH	.45	.70	.70	.90	.90	.90	1.15	1.15
SIZE	5 x 4	5 x 5	6 x 2	6 x 3	6 x 4	6 x 5	6 x 6	....
STANDARD EACH	.90	.90	1.25	1.25	1.25	1.25	1.25	....
EXTRA HEAVY EACH	1.15	1.15	1.55	1.55	1.55	1.55	1.55	....

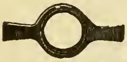


FIG. 693. PIPE REST.

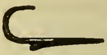


FIG. 694. PIPE HOOK.

PIPE RESTS.—FIG. 693.

SIZE	2	3	4	5	6	8	10
STANDARD EACH	.30	.40	.50	.60	.70	1.10	
EXTRA HEAVY EACH	.40	.55	.65	.80	1.00	1.75	

PIPE HOOKS.—FIG. 694.

SIZE	2	3	4	5	6	8
EACH	.08	.10	.12	.15	.20	.40

SOIL PIPE FITTINGS.

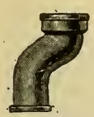


FIG. 695. OFFSET.

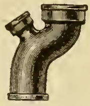


FIG. 696. WITH OUTLET.

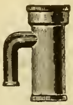


FIG. 697 VENTILATING BRANCH.

OFFSETS.—FIG. 695.

SIZE	2 x 4	2 x 6	2 x 8	2 x 10	2 x 12	3 x 4	3 x 6
STANDARD .... EACH	.50	.60	.70	.80	.90	.90	1.00
EXTRA HEAVY .... EACH	.90	1.00	1.10	1.20	1.30	1.25	1.35
SIZE	3 x 8	3 x 12	4 x 4	4 x 6	4 x 8	4 x 10	4 x 12
STANDARD .... EACH	1.10	1.40	1.00	1.15	1.30	1.45	1.60
EXTRA HEAVY .... EACH	1.50	1.80	1.40	1.60	1.80	2.00	2.25
SIZE	4 x 14	4 x 16	4 x 20	5 x 4	5 x 6	5 x 8	5 x 12
STANDARD .... EACH	1.80	2.00	2.50	1.70	1.90	2.10	2.50
EXTRA HEAVY .... EACH	2.50	2.75	3.75	2.25	2.50	2.75	3.25
SIZE	5 x 16	6 x 4	6 x 6	6 x 8	6 x 12	....	...
STANDARD .... EACH	3.00	2.00	2.25	2.50	3.00	....	....
EXTRA HEAVY .... EACH	3.75	3.00	3.25	3.50	4.00	...	....

OFFSETS WITH 2-INCH OUTLET.—FIG. 696.

SIZE	4 x 4	4 x 6	4 x 8	4 x 10	4 x 12	4 x 14	4 x 16	4 x 18	4 x 20
STANDARD .... EACH	1.50	1.65	1.80	1.95	2.10	2.30	2.50	2.75	3.00
EXTRA HEAVY ... EACH	1.90	2.10	2.30	2.50	2.75	3.00	3.25	3.75	4.25

VENTILATING BRANCH.—FIG. 697.

SIZE	2 x 2	3 x 2	4 x 2	5 x 2	5 x 3 5 x 4	6 x 2	6 x 3	6 x 4	8 x 4	8 x 5
STANDARD .... EACH	.80	1.25	1.50	2.25	2.25	3.00	3.00	3.00	6.00	
EXTRA HEAVY ... EACH	1.25	1.75	2.00	3.00	3.00	4.00	4.00	4.00	8.50	

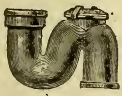


FIG. 698. S TRAP.

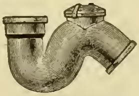


FIG. 699. ¾ S TRAP.

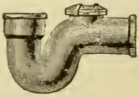


FIG. 700. ½ S TRAP.

TRAPS.—FIGS. 698, 699, AND 700.

SIZE	2	3	4	5	6
STANDARD .... EACH	1.00	1.50	2.00	3.75	4.75
EXTRA HEAVY .... EACH	1.50	2.25	3.00	4.75	6.25

SOIL PIPE FITTINGS.

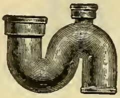


FIG. 701. S TRAP.

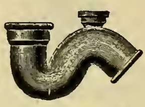


FIG. 702. 3-4 S TRAP.

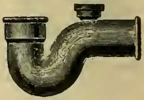


FIG. 703. 1-2 S TRAP.

TRAPS WITH 2-INCH VENT ON TOP.—FIGS. 701, 702, AND 703.

SIZE	2	3	4	5	6
STANDARD ....EACH	1.25	1.75	2.25	4.00	5.00
EXTRA HEAVY ....EACH	1.75	2.50	3.25	5.00	6.50

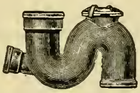


FIG. 704. TRAP, HEEL INLET.

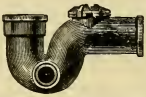


FIG. 705. TRAP, SIDE INLET.

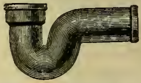


FIG. 706. PLAIN 1-2 S TRAP.

S, ½ S, and ¾ S. **TRAPS WITH 2-INCH HEEL INLETS.—FIG. 704.**
Size, 4 inch. Standard..........Each, $2.50 Extra heavy..........Each, $3.50

S, ½ S, and ¾ S. **TRAPS WITH 2-INCH SIDE INLETS.—FIG. 705.**
Size, 4 inch. Standard..........Each, $3.00 Extra heavy..........Each, $4.00

PLAIN TRAPS.—FIG. 706.

Size, 4 inch. Standard ....Each, $1.75 Extra heavy..........Each, $2.75

¾ S, or full S, same list price.

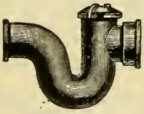


FIG. 707. RUNNING TRAP, WITH HAND HOLE.

WALWORTH MFG. CO. 1842 – 1902

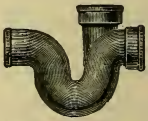


FIG. 706. RUNNING TRAP, HUB VENT.

RUNNING TRAPS, WITH HAND HOLES.—FIG. 707.

SIZE	2	3	4	5	6	8
STANDARD ....EACH	1.00	1.50	2.00	3.75	4.75	9.25
EXTRA HEAVY ....EACH	1.50	2.25	3.00	4.75	6.25	12.50

RUNNING TRAPS, WITH HUB FOR VENT.—FIG. 708.

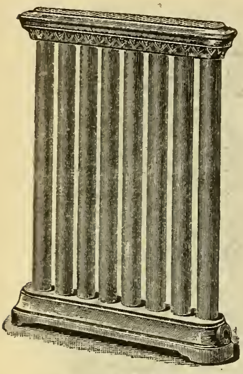
SIZE	4	5	6	8
SIZE OF VENT	4	4	4	6
STANDARD ....EACH	2.50	4.25	5.25	10.00
EXTRA HEAVY ....EACH	3.50	5.25	6.75	13.00

WALWORTH 1842 - 1902 MFG. CO.

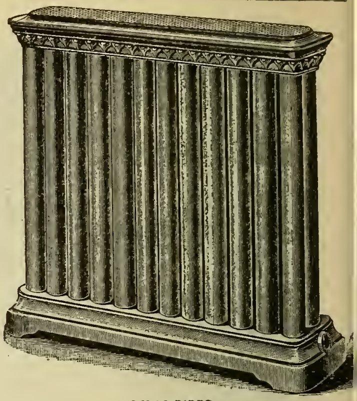
STEAM
AND HOT WATER
HEATING APPARATUS

WALWORTH 1842 - 1902 MFG. CO.

WALWORTH WELDED TUBE RADIATORS.



1 X 8 PIPES.



2 X 12 PIPES.

SINGLE ROW.

NUMBER TUBES IN EACH ROW	4	6	8	10	12	16	20	24	28	32	38
SQUARE FEET SURFACE	4	6	8	10	12	16	20	24	28	32	38
LENGTH ... INCHES	10	14	18	22	26	34	42	50	58	66	78
WIDTH ... INCHES	4¼	4¼	4¼	4¼	4¼	4¼	4¼	4¼	4¼	4¼	4¼
SUPPLY	¾	¾	¾	¾	¾	¾	1	1	1	1	1¼
RETURN	¾	¾	¾	¾	¾	¾	¾	¾	¾	¾	1

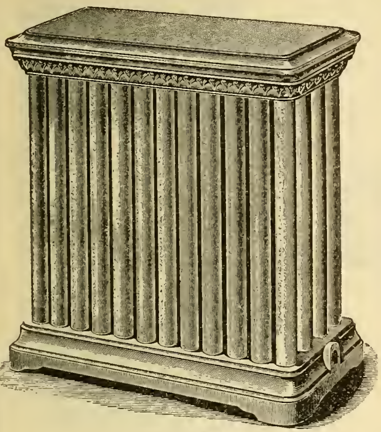
TWO ROWS.

NUMBER TUBES IN EACH ROW	4	6	8	10	12	14	16	18	20	24	28	32	38
WHOLE NUMBER OF TUBES AND SQUARE FEET OF SURFACE	8	12	16	20	24	28	32	36	40	48	56	64	76
LENGTH ... INCHES	10	14	18	22	26	30	34	38	42	50	58	66	78
WIDTH ... INCHES	6¼	6¼	6¼	6¼	6¼	6¼	6¼	6¼	6¼	6¼	6¼	6¼	6¼
SUPPLY	¾	¾	¾	1	1	1	1	1	1	1¼	1¼	1¼	1¼
RETURN	¾	¾	¾	¾	¾	¾	¾	¾	¾	1	1	1	1

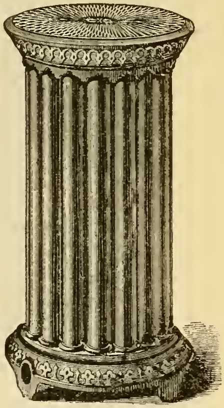
THREE ROWS.

NUMBER TUBES IN EACH ROW	4	6	8	10	12	14	16	18	20	24	28	32	38
WHOLE NUMBER OF TUBES AND SQUARE FEET OF SURFACE	12	18	24	30	36	42	48	54	60	72	84	96	114
LENGTH ... INCHES	10	14	18	22	26	30	34	38	42	50	58	66	78
WIDTH ... INCHES	8¼	8¼	8¼	8¼	8¼	8¼	8¼	8¼	8¼	8¼	8¼	8¼	8¼
SUPPLY	¾	¾	¾	1	1	1	1	1¼	1¼	1¼	1¼	1¼	1¼
RETURN	¾	¾	¾	¾	¾	¾	¾	1	1	1	1	1	1

WALWORTH WELDED TUBE RADIATORS.



4 X 12 PIPES.



CIRCULAR.

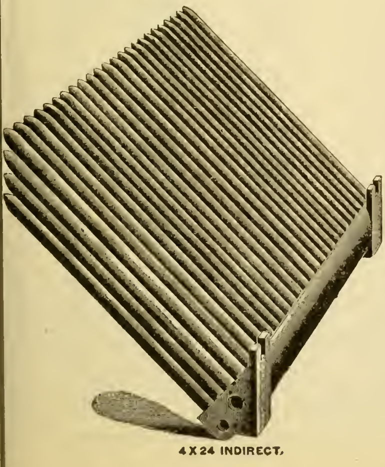
FOUR ROWS.

NUMBER OF TUBES IN EACH ROW	4	8	12	16	20	24	28	32
WHOLE NUMBER OF TUBES AND SQUARE FEET OF SURFACE	16	32	48	64	80	96	112	128
FLOOR SPACE ... INCHES	10 x 10	18 x 10	26 x 10	34 x 10	42 x 10	50 x 10	58 x 10	66 x 10
SUPPLY AND RETURN	¾ x ¾	1 x ¾	1 x ¾	1¼ x 1	1¼ x 1	1¼	1¼	1¼

CIRCULAR RADIATORS.

NO.	1	2	3	4	5	6	7	*10	*11	*12	*13	*14
WHOLE NUMBER OF TUBES AND SQ. FT. OF SURFACE	18	30	54	72	102	130	160	56	80	102	130	160
DIAMETER ... INCHES	14	18	23	26	34	38	38	26	28	33	38	38
SUPPLY AND RETURN	¾ x ¾	¾ x ¾	1 x ¾	1 x ¾	1¼ x 1	1¼	1¼	1¼	1¼	1¼	1¼	1¼

* In halves to surround columns.



4 X 24 INDIRECT.

WALWORTH INDIRECT RADIATORS.

FOUR ROWS.

NO. TUBES IN EACH ROW	4	6	8	10	12	16	20	24	28
WHOLE NUMBER TUBES AND SQ. FT. OF SURFACE	16	24	32	40	48	64	80	96	112
LENGTH OF BASE ... INCHES	9½	13	17	21	25	33	41	49	57
WIDTH OF BASE ... INCHES	7⅝	7⅝	7⅝	7⅝	7⅝	7⅝	7⅝	7⅝	7⅝
SUPPLY	1	1	1	1	1¼	1¼	1¼	1¼	1¼
RETURN	¾	¾	¾	¾	1	1	1	1	1

The warming capacity and cost of Radiators may be varied by leaving out any number of tubes, except the outer rows, without changing the external appearance; the tubes left out may be replaced at will.

Radiators may be made of every desired height; the standard height is 35 inches.

CAST IRON RADIATORS.

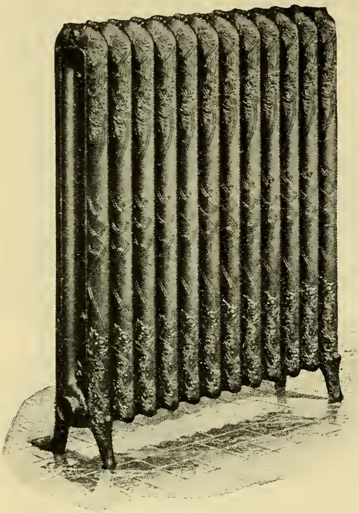


FIG. 719 A. NATIONAL TWO-COLUMN RADIATOR.

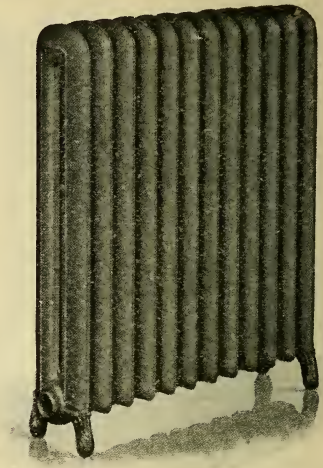


FIG. 719 B. PEERLESS TWO-COLUMN RADIATOR.

NATIONAL AND PEERLESS RADIATORS.—FIGS. 719 A AND 719 B.

FOR STEAM OR HOT WATER.

LIST OF SIZES.

No. of Sections.	*Length 2½ in. per Sec.	HEATING SURFACE – SQUARE FEET.					
		45-in. Height. 5 sq. ft. per Sec.	38-in. Height. 4 sq. ft. per Sec.	32-in. Height. 3⅓ sq. ft. per Sec.	26-in. Height. 2⅔ sq. ft. per Sec.	23-in. Height. 2⅓ sq. ft. per Sec.	20-in. Height. 2 sq. ft. per Sec.
2	5	10	8	6⅔	5⅓	4⅔	4
3	7½	15	12	10	8	7	6
4	10	20	16	13⅓	10⅔	9⅓	8
5	12½	25	20	16⅔	13⅓	11⅔	10
6	15	30	24	20	16	14	12
7	17½	35	28	23⅓	18⅔	16⅓	14
8	20	40	32	26⅔	21⅓	18⅔	16
9	22½	45	36	30	24	21	18
10	25	50	40	33⅓	26⅔	23⅓	20
11	27½	55	44	36⅔	29⅓	25⅔	22
12	30	60	48	40	32	28	24
13	32½	65	52	43⅓	34⅔	30⅓	26
14	35	70	56	46⅔	37⅓	32⅔	28
15	37½	75	60	50	40	35	30
16	40	80	64	53⅓	42⅔	37⅓	32
17	42½	85	68	56⅔	45⅓	39⅔	34
18	45	90	72	60	48	42	36
19	47½	95	76	63⅓	50⅔	44⅓	38
20	50	100	80	66⅔	53⅓	46⅔	40
21	52½	105	84	70	56	49	42
22	55	110	88	73⅓	58⅔	51⅓	44
23	57½	115	92	76⅔	61⅓	53⅔	46
24	60	120	96	80	64	56	48
25	62½	125	100	83⅓	66⅔	58⅓	50
26	65	130	104	86⅔	69⅓	60⅔	52
27	67½	135	108	90	72	63	54
28	70	140	112	93⅓	74⅔	65⅓	56
29	72½	145	116	96⅔	77⅓	67⅔	58
30	75	150	120	100	80	70	60
31	77½	155	124	103⅓	82⅔	72⅓	62
32	80	160	128	106⅔	85⅓	74⅔	64

Unless otherwise ordered, above Radiators will be tapped 2 inches, and bushed.
Each section is 7⅝ inches wide. Width of legs, 8½ inches.
All openings will have right-hand threads, unless otherwise ordered.
Connected at top and bottom with extra heavy 2¼-inch slip nipples.
Distance from floor to center of either supply or return tapping is 4½ inches.
NOTE. — Orders must specify whether Steam or Hot Water Radiators are wanted.

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* In estimating *length* of Radiator, *allow ½ inch* for each bushing.

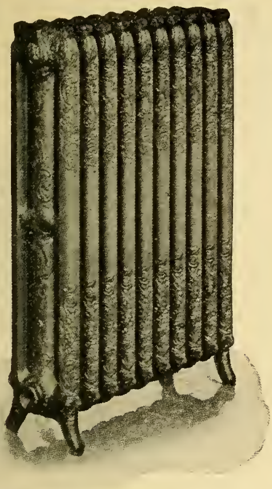

FIG. 724 A. ROCOCO ORNAMENTAL RADIATOR.

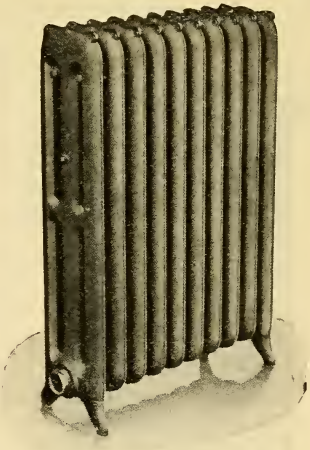

FIG. 724 B. ROCOCO PLAIN RADIATOR.

ROCOCO ORNAMENTAL AND PLAIN RADIATORS. — FIGS. 724 A AND 724 B.

LIST OF SIZES.

No. of Sections.	*Length 2½ in. per Sec.	HEATING SURFACE — SQUARE FEET.					
		44-in. Height. 6 sq. ft. per Sec.	38-in. Height. 5 sq. ft. per See.	32-in. Height. 4½ sq. ft. per Sec.	26-in. Height. 3¾ sq. ft. per Sec.	22-in. Height. 3 sq. ft. per Sec.	18-in. Height. 2¼ sq. ft. per Sec
2	5	12	10	9	7½	6	4½
3	7½	18	15	13½	11¼	9	6¾
4	10	24	20	18	15	12	9
5	12½	30	25	22½	18¾	15	11¼
6	15	36	30	27	22½	18	13½
7	17½	42	35	31½	26¼	21	15¾
8	20	48	40	36	30	24	18
9	22½	54	45	40½	33¾	27	20¼
10	25	60	50	45	37½	30	22½
11	27½	66	55	49½	41¼	33	24¾
12	30	72	60	54	45	36	27
13	32½	78	65	58½	48¾	39	29¼
14	35	84	70	63	52½	42	31½
15	37½	90	75	67½	56¼	45	33¾
16	40	96	80	72	60	48	36
17	42½	102	85	76½	63¾	51	38¼
18	45	108	90	81	67½	54	40½
19	47½	114	95	85½	71¼	57	42¾
20	50	120	100	90	75	60	45
21	52½	126	105	94½	78¾	63	47¼
22	55	132	110	99	82½	66	49½
23	57½	138	115	103½	86¼	69	51¾
24	60	144	120	108	90	72	54
25	62½	150	125	112½	93¾	75	56¼
26	65	156	130	117	97½	78	58½
27	67½	162	135	121½	101¼	81	60¾
28	70	168	140	126	105	84	63
29	72½	174	145	130½	108¾	87	65¼
30	75	180	150	135	112½	90	67½
31	77½	186	155	139½	116¼	93	69¾
32	80	192	160	144	120	96	72

Unless otherwise ordered, above radiators are tapped 2 inches, and bushed.

Each section is 10 inches wide. Width of legs, 10¼ inches.

All openings will have right-hand threads, unless otherwise ordered.

All Rococo Radiators made at Detroit plant are connected with extra heavy right and left hand threaded nipples; steam, inches at bottom; hot-water, 2 inches at top and bottom.

Top of each hot-water leg section has 2-inch plug, which can be taken out to make top connection when desired.

Distance from floor to center of tapping: single-pipe steam, 4 inches; double-pipe steam, supply 4½ inches, return 4 ches; hot-water supply and return, 4½ inches.

NOTE. — Orders must specify whether steam or hot-water radiators are wanted.

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*In estimating *length* of radiator, *allow ¼ inch* for each bushing.

THE NATIONAL FEED WATER HEATERS.—FIG. 737.

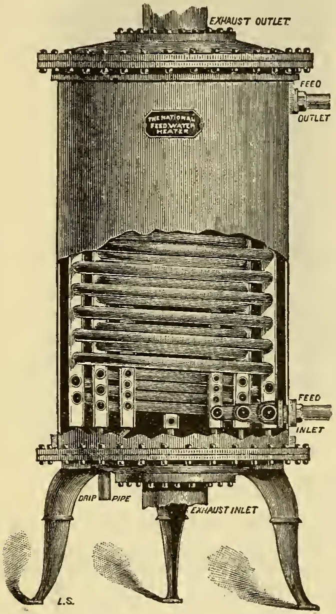


FIG. 737. NATIONAL HEATER.

No.	Horse Power.	Diameter of Feed Pipe.	Diameter of Exhaust Pipe.	Outside Dimensions of Heater. Height.	Outside Dimensions of Heater. Diameter.	Price.
		INCHES.	INCH.	INCH.	INCH.	
05	5	½	2	10	7	$20.00
1	10	½	2	12	11	25.00
1½	15	½	2½	17	11	30.00
2	20	¾	2½	18	16	40.00
2½	25	1	3	20	19	50.00
3	30	1	4	22	20	60.00
4	40	1	4	23	20	80.00
5	50	1	4	29	20	100.00
6	60	1	4	34	20	110.00
8	80	1	4	39	20	130.00
10	100	1 or 1¼	5	56	22	150.00
12	125	1¼ or 1½	5.	57	22	175.00
15	150	1½	8	60	26	220.00
20	200	1½ or 2	8	70	26	280.00
25	250	1½ or 2	8	81	29	340.00
30	300	2	8	89	29	400.00
40	400	2 or 2½	10	88	36	500.00
50	500	2 or 2½	10	102	36	600.00
60	600	2½ or 3	12	101	42	700.00
80	800	3	12	110	42	1,000.00
100	1,000	3 or 4	18	117	56	1,500.00

The heights from No. 10 to No. 250 include legs; no legs below No. 10 unless ordered.

Sizes 5 to 25 horse power have exhaust inlet and outlet in tc head; sizes 30 horse power and over have inlet in bottom and ou let in top heads, unless ordered otherwise.

Size of exhaust varied to suit requirements of engine.

Two or more exhausts in bottom head if necessary.

THE JACOBS PATENT WATER TUBE FEED-WATER HEATERS.—FIG. 737 A.

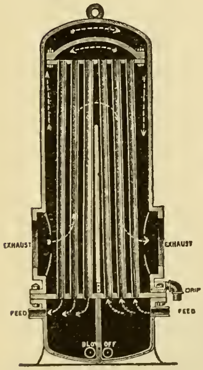


FIG. 737 A.
JACOBS FEED-WATER HEATER.

Horse Power.	Diameter Flanges. Inches.	Height. Inches.	Number Tubes.	Diameter Tubes. Inches.	Diameter Exhaust. Inches.	Diameter Feed Inches.	Price.
40	15	42½	14	1¼	6	1¼	90.00
50	15	51½	14	1¼	6	1¼	105.00
60	15	59½	14	1¼	6	1¼	125.00
80	15	68½	14	1¼	6	1¼	144.00
100	20	55	30	1¼	8	1¼	190.00
125	20	64	30	1¼	8	1½	240.00
150	20	73	30	1¼	8	1½	300.00
200	24	63	52	1¼	8	1½	380.00
250	24	74	52	1¼	10	2	440.00
300	24	85	52	1¼	10	2	525.00
400	28	77	80	1¼	12	3	650.00
500	28	89	80	1¼	14	3	750.00
600	28	102½	80	1¼	14	3	880.00
700	34½	84½	114	1¼	16	3	1,020.00
800	34½	96½	114	1¼	16	3	1,140.00
900	34½	108½	114	1¼	16	3	1,270.00
1000	38½	116½	126	1¼	18	4	1,400.00

In writing for prices, state Horse Power of Engine and Boiler. Estimates fu nished for larger sizes upon application.

In connecting the Heater with the Boiler, always place a Safety Valve on tl Feed Pipe.

STEAM TRAPS.

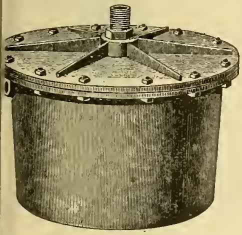


FIG. 738. VALVE BOX.

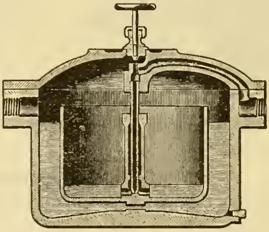


FIG. 739. WALWORTH STEAM TRAP.

VALVE BOXES.—FIG. 738.

WITH BRASS SPINDLES.

INSIDE DIAMETER	12	15	18
DRAINING CAPACITY IN FEET OF 1-INCH PIPE	2,500	4,500	6,000
EACH	20.00	28.00	33.00

STEAM TRAPS.—FIG. 739.

WALWORTH MFG. CO.'S PATTERN.

NO.	1	2	3	4
OUTLET AND INLET	¾	1	1¼	1½
HEIGHT	10	12	14½	17
DIAMETER	9½	12	14½	17
DRAINING CAPACITY IN FEET OF 1-INCH PIPE	1,500	2,500	4,500	6,000
EACH	20.00	28.00	35.00	65.00

NASON SIDELUG TRAPS.—FIG. 739 A.

FOR HIGH PRESSURE. FROM 50 TO 150 POUNDS.

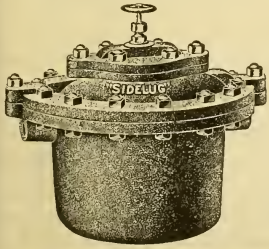


FIG. 739 A. NASON SIDELUG TRAP.

NO.	1	2	3	4	5
SIZE OF PIPE CONNECTIONS.....INCH	½	¾	1	1¼	1½
DIAMETER OUTSIDE OF FLANGES.....INCH	10¾	14¼	15¾	19	24¼
HEIGHT TO TOP OF COVER.....INCH	8	10	12	14	15½
MAXIMUM DISCHARGE LBS. WATER PER MIN.	2	5	8	12	20
DRAINING CAPACITY IN FEET OF 1-INCH PIPE	1,050	2,700	4,200	6,000	10,500
EACH	16.85	21.30	29.25	45.50	74.75

STEAM TRAPS.

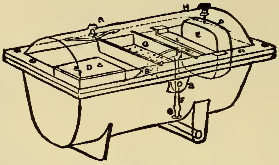


FIG. 740. CHAPMAN'S STEAM TRAP.

CHAPMAN'S STEAM TRAPS.—FIG. 740.

NO.	1	2	3	4
DRAINING CAPACITY IN FEET OF 1-INCH PIPE	1,500	3,000	7,000	10,000
INLET AND OUTLET	1	1¼	1½	2
STANDARD ... EACH	25.00	35.00	60.00	70.00
EXTRA HEAVY ... EACH	.....	50.00	80.00	.....

No. 1 Standard will work up to 75 lbs. pressure only. Other sizes Standard weight will work up to 75 lb but when specially ordered can be furnished to work to 125 lbs. The Extra Heavy will work up to 200 lb

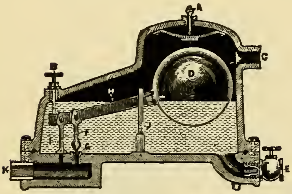


FIG. 740 A. No. 00 AND 0. McDANIELS' TRAP.

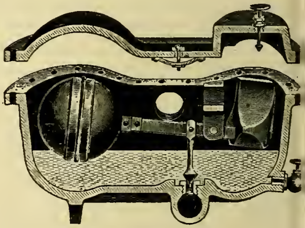


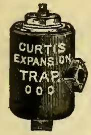
FIG. 741. McDANIELS' STEAM TRAP. NOS. 1 TO

McDANIELS' STEAM TRAPS.—FIGS. 740 A AND 741.

NO.	00	0	1	2	3	4	5
DRAINING CAPACITY IN FEET OF 1-INCH PIPE	450	1,000	3,500	7,000	14,000	20,000	25,000
INLET AND OUTLET	½	¾	1	1¼	1½	2	2½
STANDARD ... EACH	8.00	12.00	30.00	40.00	65.00	75.00	100.00
EXTRA HEAVY ... EACH	.....	24.00	40.00	55.00	80.00	90.00	100.00

No. 00 for pressure up to 100 lbs. only. Nos. 1 to 5, standard weight up to 100 lbs., but will b furnished to work to 125 lbs. without extra charge. Extra Heavy Traps are for 125 to 200 lbs. pressure.

STEAM TRAPS.



G. 743. CURTIS' EXPANSION TRAP.

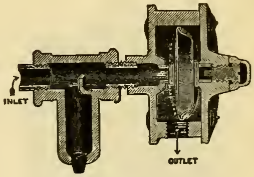


FIG. 744. HAWES' STEAM TRAP.

CURTIS' EXPANSION TRAPS.—FIG. 743.

NO.	000	00	0	1
DRAINING CAPACITY IN FEET OF 1-INCH PIPE	200	500	1,000	3,000
TAPPED FOR	½	½	½	¾
EACH	10.00	13.00	18.00	25.00

HAWES' STEAM TRAPS.—FIG. 744.

NO.	1	2	3	4	4½*	5	00**
DRAINING CAPACITY IN FEET OF 1-INCH PIPE	500	1,000	2,000	4,000	10,000	20,000	100
INLET AND OUTLET	½	¾	1	1¼	1¼	1½	¼
EACH	11.00	16.00	21.00	26.00	35.00	50.00	6.00

* With 2 Diaphragms. ** For Glue Pots and Radiators.

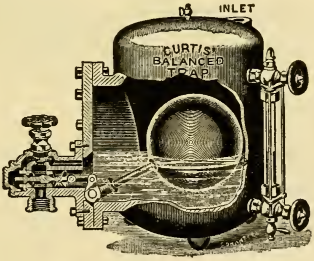


FIG. 744½. CURTIS' BALANCED STEAM TRAP.

CURTIS' BALANCED STEAM TRAPS.—FIG. 744½.

NO.	00	0	1	2	2½	3	4	5
RAINING CAPACITY IN FEET OF 1-INCH PIPE	1,500	2,500	4,000	7,000	10,000	15,000	26,000	45,000
IZE VALVE	½	½	¾	1	1¼	1½	2	3
EACH	20.00	25.00	30.00	40.00	55.00	75.00	100.00	125.00

Glass Water Gauge extra, $3.00.

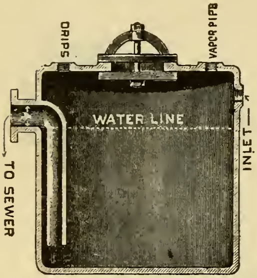


FIG. 744 B. BLOW-OFF TANK.

BLOW-OFF TANK.—FIG. 744 B.

No. 1 Diameter, 30 inches; height, 36 inches	Each	$60.00
No. 2 Diameter, 36 inches; height, 36 inches	Each	85.00
Size of Man Hole		10½" x 14½"

McDANIELS' SUCTION FITTINGS.—FIG. 751.

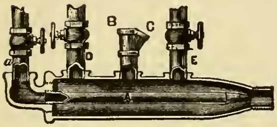


FIG. 751. McDANIELS' SUCTION FITTINGS.

NO.	1	2	3
OUTLET	1	1½	2
DRAIN PIPES	1	1¼	1½
SUCTION AND FEED PIPES	¾	1	1¼
EACH	10.00	12.00	15.00

McDANIELS' SUCTION TEES.—FIG. 752.

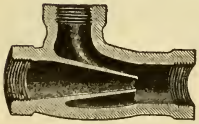


FIG. 752. McDANIELS' SUCTION TEE.

SIZE	¾	1	1¼	1½	2	2½	3
STANDARD WEIGHT......EACH	.80	1.00	1.25	1.50	2.00	2.50	3.00
EXTRA HEAVY..........EACH		2.00	2.50	3.00	4.00	6.00	9.00

McDANIELS' SIPHONS.—FIG. 753.

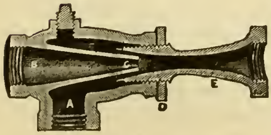


FIG. 753. McDANIELS' PATENT SIPHON.

NO.	0	1	2	3	4	5
SUCTION AND DISCHARGE	¾	1	1¼	1½	2	2½
EACH	5.00	6.00	8.00	10.00	12.00	20.00

EXHAUST HEADS.

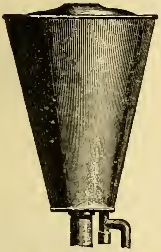


FIG. 754. McDANIELS' CONDENSER HEAD.

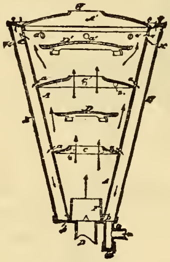


FIG. 754. SECTIONAL VIEW.

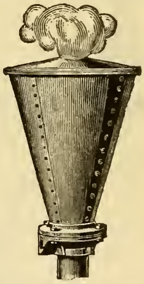


FIG. 755. KEYSTONE EXHAUST PIPE HEAD.

McDANIELS' AND KEYSTONE EXHAUST HEADS.—FIGS. 754 AND 755.

SIZE	2	2½	3	3½	4	5	6	7	8	10	12
FIG. 754. SCREWED ... EACH	25.00	27.50	30.00	35.00	40.00	....	....	...	....	....	....
FIG. 754. FLANGED ... EACH	....	....	....	....	....	50.00	60.00	70.00	85.00	120.00	150.00
FIG. 755. SCREWED ... EACH	14.00	16.00	18.00	21.00	24.00	30.00	....	....	....	....	....
FIG. 755. FLANGED ... EACH	....	....	....	....	....	....	36.00	43.00	50.00	85.00	100.00

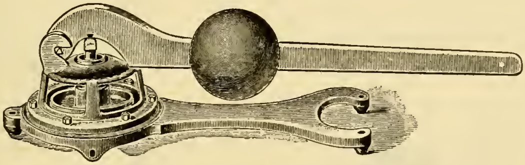


FIG. 760. CLARK'S DAMPER REGULATOR.

CLARK'S DAMPER REGULATORS.—FIG. 760.

NO.	1	2	3
FOR BOILERS ... HORSE POWER	5	20	30 and Larger.
EACH	10.00	15.00	25.00
RUBBER DIAPHRAGMS ... EACH	.50	.63	1.25

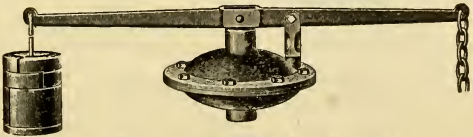


FIG. 761. LOW PRESSURE DAMPER REGULATOR.

Fig. 761. Low Pressure Damper Regulator	Each, $4.50
Rubber Diaphragms, 9 inches diameter	Each, .75

RADIATOR AIR VALVES.

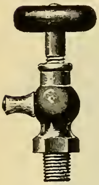


FIG. 767.
NO. 1.

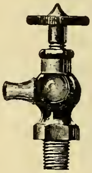


FIG. 768.
NO. 2.

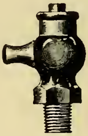
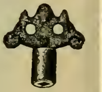


FIG. 771.
NO. 5.



RADIATOR AIR VALVES.

SIZE.		FIG. 767.	FIG. 768.	FIG. 771
1/8	Brass	....	50	.50
1/8	Nickel Plated	.70	.55	.55
1/4	Brass	.70	55	.55
1/4	Nickel Plated	.75	60.	.60

Keys for No. 5, Extra, Net, Each, Brass, 10c.; Nickel Plated, 12c.

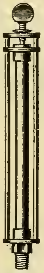


FIG. 771A.
WALWORTH EXPANSION AIR VALVE.

WALWORTH EXPANSION AIR VALVES.—FIG. 771A.

FOR COILS AND INDIRECT RADIATORS

SIZE	3/8
EACH	1.60

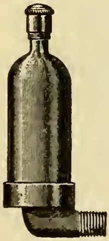


FIG. 774. NO. 1. 1/8".
PERFECTED DUPLEX.

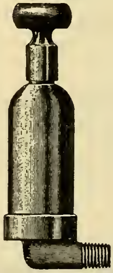


FIG. 775. NO. 2. 1/8".
PERFECTED DUPLEX.

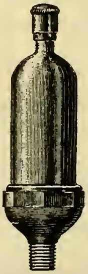


FIG. 776. NO. 3. 1/4".
PERFECTED DUPLEX.

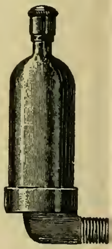


FIG. 776A. 1/8"
BOSTON.

AUTOMATIC AIR VALVES.

FIG.	774	775	776	776 A
NICKEL PLATED EACH	1.15	1.45	1.15	1.15

RADIATOR AIR VALVES.

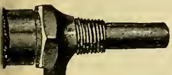


FIG. 788 NO. 1.

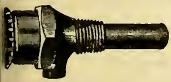


FIG. 787. NO. 2.

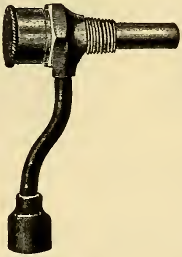


FIG. 788. NO. 3.

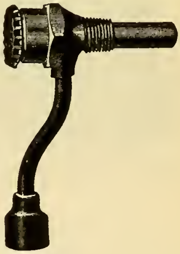
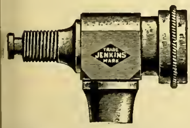


FIG. 789 NO. 4.

VICTOR AUTOMATIC AIR VALVES.

FIG.	786	787	788	789
NICKEL PLATED .... DOZ.	7.50	7 50	9.00	9.00



G. 789 B. JENKINS AIR VALVE.

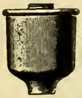


FIG. 789 C. DRIP CUP.

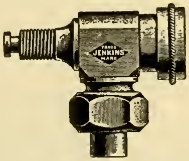


FIG. 789 D. WITH UNION.

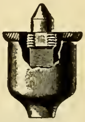


FIG. 789 E. AUXILIARY VALVE AND DRIP CUP.

JENKINS AUTOMATIC AIR VALVES.

FIG.		789 B	789 C	789 D	789 E
SIZE ⅛	NICKEL PLATED .... PER DOZ.	7.50	2.00	9.50	2.50
SIZE ¼	NICKEL PLATED .... PER DOZ.	....	......	10.00	.. ...

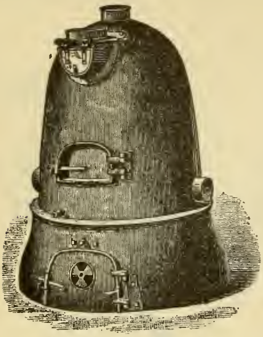


FIG. 808. WEATHERED'S HOT WATER BOILER.

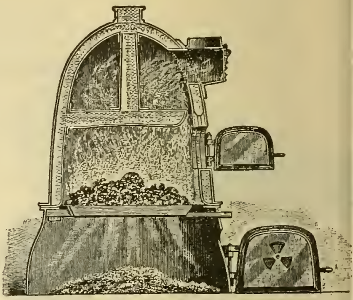


FIG. 808. SECTIONAL VIEW.

WEATHERED'S IMPROVED HOT WATER BOILERS.—FIG. 808.

DIMENSIONS.					MAXIMUM HEATING CAPACITIES.				PRICE.
Size of Boilers	Height of Boiler	Diameter of Boiler.	Diameter of Base.	Diameter of Grate.	Hot Water Direct Radiators.	Cubic Feet of Space. Direct Radiation.	Amount of 1" Pipe Direct Radiation	No. of Linear Feet of 4-inch Pipe.	
					....	....	....	....	
					....	....	....	....	
No. 2.	39 in.	20 in.	24 in.	13 in.	350 sq.ft.	12,250 cub. ft.	580 ft.	250 ft.	54.40
No. 3.	43 "	27 "	33 "	19 "	550 "	19,250 "	900 "	400 "	86.40
No. 4.	46 "	31 "	39 "	23 "	900 "	31,500 "	1,500 "	650 "	112.00
No. 5.	52 "	37 "	44 "	27 "	1,250 "	43,750 "	2,100 "	1,000 "	140.00
No. 6.	60 "	43 "	50 "	33 "	1,800 "	63,000 "	3,000 "	1,500 "	215.20

It must be distinctly understood that, in estimating the power of a boiler, all mains, branches and connecti pipes are to be carefully considered, and allowed for as so much radiating surface.

NOTE.— The Weathered Hot Water Boiler is as well adapted for House Heating as for Greenhouse Heatin

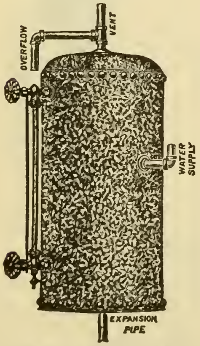


FIG. 811. GALVANIZED STEEL EXPANSION TANKS.

GALVANIZED STEEL EXPANSION TANKS. — FIG. 811.

Capacity. Gallons.	Size. Inches.	Tapped for Gauge. C. to C.	For Glass. Length.	Price.	Capacity. Gallons.	Size. Inches.	Tapped for Gauge. C. to C.	For Glass. Length.	Price.
10	12 x 20	13½	12	8.00	32	16 x 36	19½	18	15.0
12	12 x 24	13½	14	8.50	42	16 x 48	25½	24	16.5
15	12 x 30	15½	14	9.00	66	18 x 60	25½	24	31.0
18	12 x 36	19½	18	9.50	82	20 x 60	25½	24	37.0
20	14 x 30	15½	14	12.50	100	22 x 60	25½	24	51.0
24	14 x 36	19½	18	13.00	120	24 x 60	25½	24	58.0
26	16 x 30	15½	14	14.00					

Above prices do not include Water Gauge or Brasses.

See page 184 for Expansion Tank Gauge.

GLUE HEATERS.

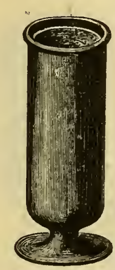


FIG. 843. VAPOR POT.

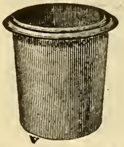


FIG. 844. GLUE HEATER, LARGE

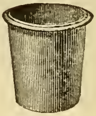


FIG. 845. GLUE HEATER, SMALL

VAPOR POTS.—FIG. 843.

For use in cotton weaving rooms.................Each $2.50

GLUE HEATERS.—FIGS. 844 AND 845.

Fig. 844.	Large	One hole 7 inches in diameter; capacity, 1 gallon............	Each	$3.10
Fig. 845.	Small.	One hole 5 inches in diameter; capacity, 2 quarts...........	Each	2.00

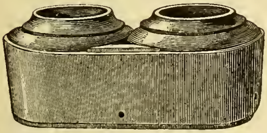


FIG. 846. TWO HOLE GLUE HEATER.

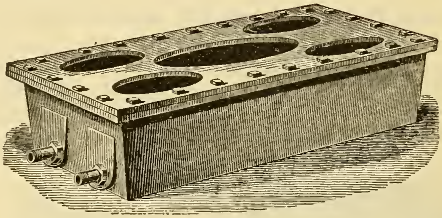


FIG. 847. FIVE HOLE GLUE HEATER

GLUE HEATERS.—FIGS. 846 AND 847.

Fig. 846.	2 hole, 6 inches in Diameter......................................	Each	$6.25
Fig. 847.	5 hole (1–11½ inches diameter, 4–6½ inches diameter), with coil......	Each	28.25

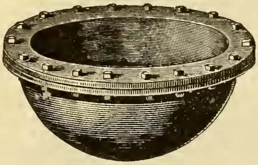


FIG. 848. GLUE AND PASTE KETTLE.

GLUE AND PASTE KETTLES.—FIG. 848.

DOUBLE CASED AND BOLTED.

No	Diameter	Capacity	Each
NO. 1..................... EACH	12½ inches	4 gallons	15.00
NO. 2..................... EACH	21 inches	10 gallons	27.00

GLUE HEATERS.

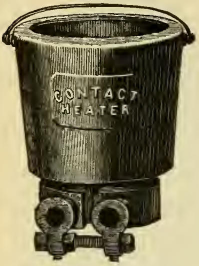
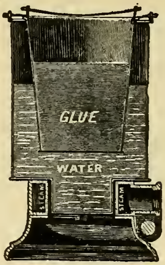


FIG. 849. CABINET BENCH WITHOUT GLUE PAIL.



SECTIONAL VIEW.

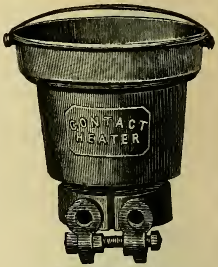


FIG. 850. BINDERY BENCH. WITH GALLERY GLUE PAIL

CONTACT GLUE HEATERS.—FIGS. 849 AND 850.

FIG. 849. CAST IRON. Bench size (no pots), capacity 2 quarts	Each	2.50
FIG. 850. CAST IRON. Bindery size, No. 1 (no pots)	Each	2.50
FIG. 850. CAST IRON. Bindery size, No. 2 (no pots)	Each	2.75
COPPER POTS, double seamed, Cabinet 2 quarts capacity	Each	.75
COPPER POTS, double seamed, Bindery size, with Gallery, No. 1 2½ quarts	Each	2.50
COPPER POTS, double seamed, Bindery size, with Gallery, No. 2 1 gallon	Each	3.00
GLUE MAKER. 10 gallon size	Each	20.00
GLUE MAKER. 5 gallon size	Each	12.00

In estimating the cost of Bench or Individual Glue Heaters, the expense of piping them should be considered *The Contact Heaters require but one line of pipe* and only two valves to a section of several heaters; whereas other Steam Heaters require two lines of pipe.

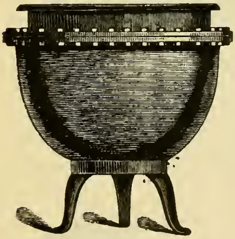
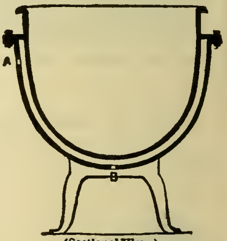


FIG. 851. STEAM JACKET KETTLE.



(Sectional View.)
FIG. 851.

STEAM JACKET KETTLES.—FIG. 851.

FLANGED AND BOLTED.

For Hotels and Institutions where cooking is done on a large scale; also for Tanners, Curriers, and Tallow Oil, Lard, and Soap Manufacturers.

CAPACITY IN GALS.	1	6	10	15	25*	30	45	50*	60	80*	125
EACH	6.00	20.00	25.00	30.00	50.00	60.00	90.00	100.00	110.00	160.00	175.00

The Kettles will stand any pressure ordinarily used in boilers.

Kettles 15 gallons and smaller have no stands.

* Those marked with a * are without a rim on the top.

STEAM JACKET KETTLES.

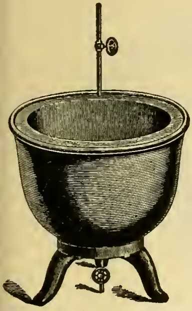


FIG. 852.

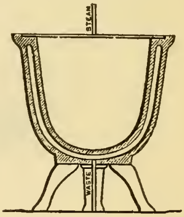


FIG. 852. SECTIONAL VIEW.

WHITELEY'S SEAMLESS DOUBLE JACKET KETTLES.—FIG. 852.

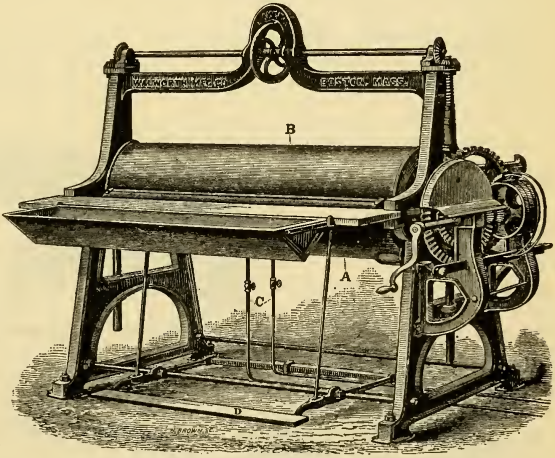
CAPACITY IN GALLONS	5	10	15	20	25	30	40
WITHOUT COVER....EACH	37.50	52.00	60.00	75.00	90.00	105.00	120.00
CAPACITY IN GALLONS	50	60	75	100	125	150	200
WITHOUT COVER....EACH	135.00	150.00	180.00	235.00	265.00	330.00	400.00

These Kettles are all cast in one piece, having a steam space cored out. They do not require either Bolts or Packing in their construction, and are proved at a steam pressure of 75 pounds. Covers of Black or Galvanized Iron and Planished Copper, also larger sized Kettles, made to order.

Adapted for Hotels and large Laundries. It is worked by *power* and heated by *steam*. It is extensively used in England and France by Dyers, Scourers, Silk, Cotton, and Woolen Manufacturers, and Public Laundries, as well as Hotels.

It is now in use at the Parker House, Hotel Brunswick, Hotel Vendome, and Young's Hotel, Boston; Fifth Avenue Hotel, Windsor House, Hotel Imperial, Gilsey House, and Union Club House, New York; Continental Hotel, Philadelphia; as well as many smaller establishments.

We warrant them to give satisfaction.



FRENCH IRONING AND MANGLING MACHINES.—FIG. 853.

SIZE A. (CYLINDER 54 INCHES BY 13 1-2 INCHES.)..........EACH	325.00
SIZE B. (CYLINDER 84 INCHES BY 17 INCHES.)..........EACH	550.00

GRATE BARS.

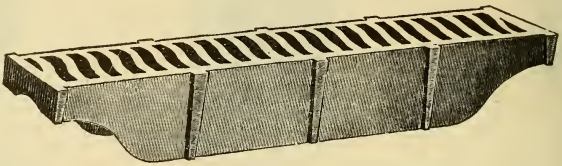


FIG. 872. SMITH'S GRATE BAR.

SMITH'S GRATE BARS.—FIG. 872.

Average weight, 60 pounds per square foot

	Per Pound.
⅜, ½, or ⅝ inch space, according to fuel to be used	04½

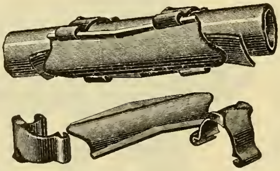


FIG. 874. PATENT LEAK STOPPER.

PATENT LEAK STOPPERS.—FIG. 874.

SIZE PIPE	½	¾	1	1¼	1½	2	2½
EACH	.50	.55	.60	.70	.80	.90	1.10

Having disposed of our Automatic Sprinkler Department, pages 297 to 302, inclusive, of our former editions of Catalogue do not appear in this issue.

ELECTRIC
RAILWAY BRACKETS
GAS MACHINES AND MIXERS

Having disposed of our Automatic Sprinkler Department, pages 297 to 302, inclusive, of our former editions of Catalogue do not appear in this issue.

Having Disposed of Our Automatic Sprinkler Department, Pages 297 to 302, Inclusive, Of Our Former Editions of Catalogue Do Not Appear in This Issue.

CLIPS AND HANGERS.

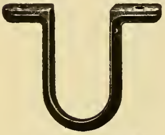


FIG. 876 A. U CLIP.

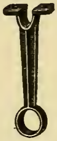


FIG. 876 B. RING HANGER.

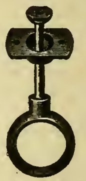


FIG. 876 C. ADJUSTABLE RING HANGER.

CLIPS.—FIG. 876 A.

SIZE	½	¾	1	1¼	1½	2	2½	3	3½	4
*LENGTH. FIG. 876 A. NO. 1	13/32	25/32	29/32	63/64	1 5/32	1¼	1 13/16	1⅞	....	....
LENGTH. FIG. 876 A. NO. 2	1 11/16	1 21/32	1 23/32	1 27/32	2	2 5/16	2 7/16	2 13/16	3	3¾
LENGTH. FIG. 876 A. NO. 3	....	5	5 5/16	5 7/16	5 19/32	5¾	....	....	....	....
PRICE. NO. 1 AND NO. 2. EACH	....	.09	.10	.11	.12	.15	.35	.39	.47	.60
PRICE. NO. 3 EACH	....	.20	.22	.24	.25	.32	....	....	....	....

* Lengths given are from floor to center of pipe.

HANGERS.—FIG. 876 B

SIZE	¾	1	1¼	1½	2	2½	3
*LENGTH, FIG. 876 B	7	7 3/32	7¼	7 5/16	7 9/16	7⅞	8⅛
EACH	.09	.10	.11	.18	.29	.33	.46

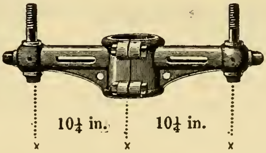
* Lengths given are from floor to center of pipe.

ADJUSTABLE RING HANGERS.—FIG. 876 C.

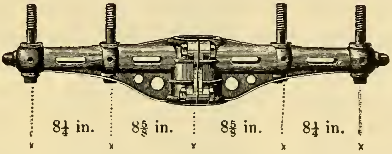
SIZE	¾	1	1¼	1½	2	2½	3	3½	4
*FIG. 876 C. WITHOUT PIPE EACH	.36	.38	.40	.45	.50	.70	.75	....	....

* Prices given are for nut flange and ring, and do not include pipe, which can be cut to suit requirements.

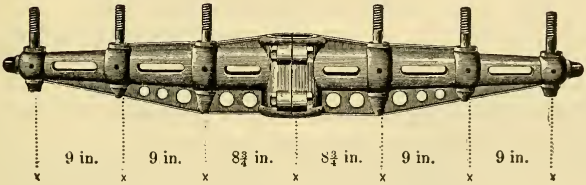
FEED ARMS.



DOUBLE FEED ARM, 2 PIN, WITH IRON PINS CAST IN.



DOUBLE FEED ARM 4 PIN WITH IRON PINS CAST IN.



DOUBLE FEED ARM, 6 PIN, WITH IRON PINS CAST IN.

INCANDESCENT BRACKETS.

¾ in Pipe, Standard Length 4 feet Other lengths to order.

WALWORTH GAS MACHINES AND MIXERS FOR PUBLIC AND PRIVATE BUILDINGS AND MECHANICAL PURPOSES.

Notwithstanding the rapidly increasing use of electricity and the extension of municipal lighting plants to small towns and villages, we are constantly installing the Walworth Gas Machines and Mixers for both lighting and mechanical purposes Our machines have been from time to time during the last thirty-five years so improved that to-day they represent the highest standard possible for the production of gasolene gas, combining the greatest degree of safety with the least amount of care

Our machines, being constructed almost entirely of brass and copper, are superior to any other in the market, both in perfection of operation and workmanship Their durability is guaranteed, as we replace any defective material that may develop within five years from date of installation.

We use no fire about our apparatus, it is safe and reliable at all times, winter or summer, and insurance is readily obtained without paying additional premium The gas is no more dangerous than coal gas, and by the use of incandescent burners equals in brilliancy the best city gas, at a cost less than one dollar per thousand cubic feet

No machine is sent out until thoroughly tested and known to be perfect.

GENERAL DESCRIPTION.

Our apparatus consists of a Generator, Pump, and Mixer, and on the opposite page we show their general arrangement and method of installation

THE GENERATOR (C) holding the gasolene is located at a distance from thirty to fifty feet from the building, and is buried from four to five feet in the ground

THE AIR PUMP (J) is located in the cellar or basement, on a slightly higher level than the generator The air discharge pipe (D) from the pump is carried above the filling pipe (B), thus avoiding any possibility of the gasolene backing and entering the pump in case the generator is flooded during the operation of filling The pump is operated by the weight (L), forcing the air through discharge pipe (D) to the generator, where the air is charged with the vapor of the gasolene and returns through pipe (E) to the mixer (K)

THE MIXER (K) By the use of the mixer air is added to the vapor in such proportion as is necessary to produce a uniform gas under the varying conditions of quantity, quality, and temperature of the gasolene The gas then passes through mixer discharge pipe (H) to riser pipe (E), where it is distributed to the burners

WALWORTH GAS MACHINES.

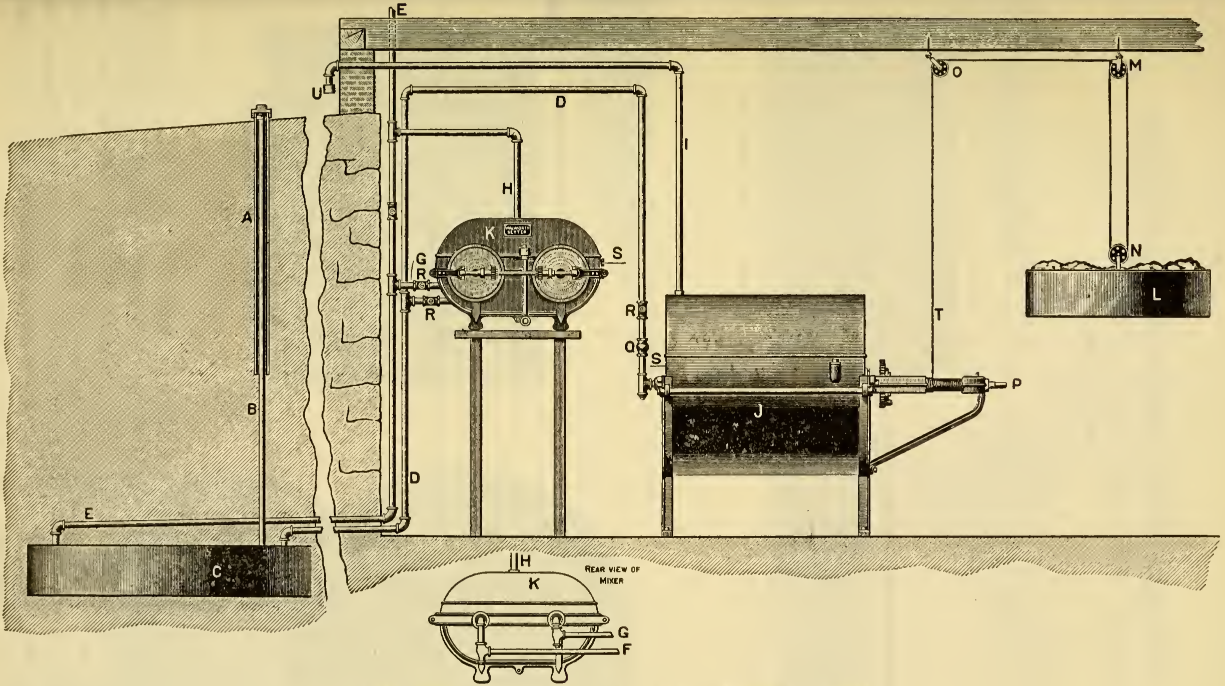


FIG. 892. GENERAL ARRANGEMENT OF THE WALWORTH GAS MACHINE AND MIXER.

A.	3″ Sleeve with cap covering B.
B.	Fill pipe to C.
C.	Generator.
D.	Air from J to C.
E.	Gas to house system from C.
F.	Air from J to K.
G.	Gas from C to K.
H.	Mixed air and gas from K to house system.
I.	Air induction to J.
J.	Air pump.
K.	Mixer.
L.	Weight pan — power for J.
M.	4 Sheave pulley — top.
N.	4 Sheave pulley — bottom.
O.	Single pulley.
P.	Crank shaft — for winding.
Q.	Check valve.
R.	Cock.
S.	Water line.
T.	Wire cable holding L
U.	Strainer for induction I.

FOR DESCRIPTION IN DETAIL OF APPARATUS, SEE PAGES 306 TO 309.

WALWORTH GAS MACHINES AND MIXERS.

GENERATORS

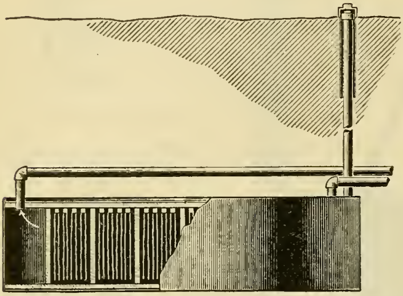


FIG. 892 A. ONE PAN GENERATOR.

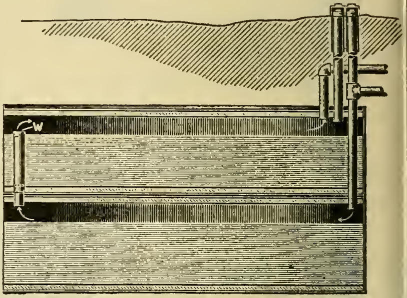


FIG 892 B. TWO PAN GENERATOR.

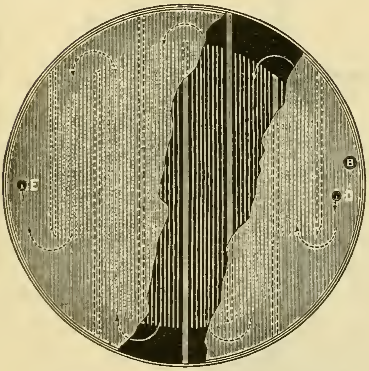


FIG. 892 A TOP OR PLAN VIEW OF GENERATOR.

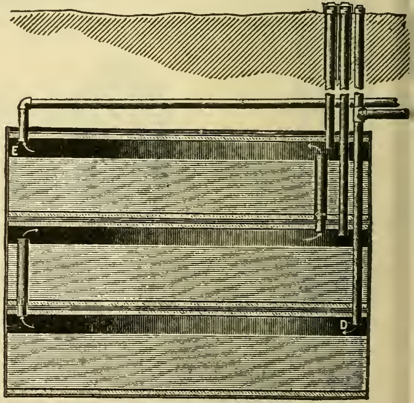


FIG. 892 C. THREE PAN GENERATOR.

The above cuts show sectional views of our Copper Generator or Gasolene Holder (G) which w make of different capacities, as occasion requires. These Generators are constructed of any number o pans necessary to obtain proper storage and evaporating capacity. They are made of heavy sheet coppe tinned inside, and formed around a wooden framework with dividing partitions, between which are hung many strips of burlap, through which the air is forced (as shown by arrows in plan view) from the pum (J), thus thoroughly saturating it with the vapor before it reaches the discharge pipe (E), and greatly increasing the amount of evaporation.

WALWORTH GAS MACHINES AND MIXERS.

AIR PUMPS.

The Air Pump (J) as shown on page 305 is operated by a weight. The pump is filled with water to the water line (S), forming a seal through which air cannot pass. The inner cylinder is so constructed that as it revolves the air is displaced by the water and forced out through pipe (D) into the generator (C), thus maintaining a pressure on the gasolene and forcing the vapor into the mixer (K).

The winding drum is connected to the inner cylinder of the pump by ratchet and pawl. Winding this drum raises the weight, which is held suspended and stationary by the ratchet, except when gas is being consumed, thus allowing the inner cylinder to revolve as the air is displaced and forced into the generator (C) through the pipe (D).

WATER WHEEL PUMP.—FIG. 892 D.

Wherever a constant supply of water can be obtained we recommend this style of pump, operated by water pressure instead of weight. This pump requires no attention, working automatically, the water supply valve opening and closing as the gas is turned on or off.

The amount of water consumed is very small, and the cost is nominal, especially taking into consideration the fact that the pump needs absolutely no attention

The inner construction is identically the same as the weight pump The supply of water to the overshot wheel is controlled by the rising and falling of the aërometer, which opens and closes the valve.

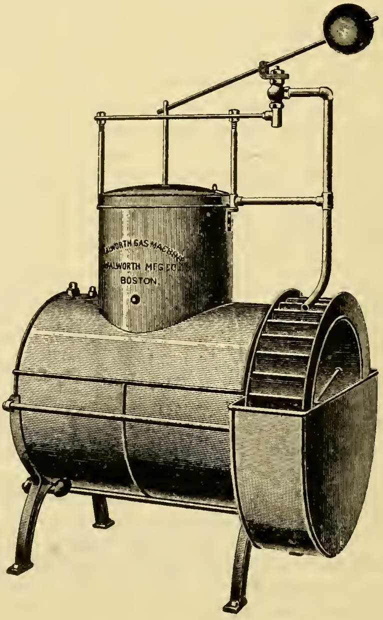


FIG 892 D. WATER WHEEL PUMP.

WALWORTH GAS MACHINES AND MIXERS.

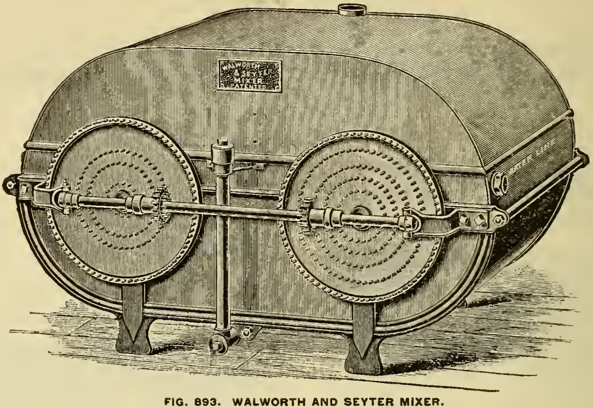


FIG. 893. WALWORTH AND SEYTER MIXER.

WALWORTH AND SEYTER MIXERS.—FIG. 893.

Our mixer consists of two copper cylinders and a mixing chamber inside the same shell. The gas and air, after entering their respective cylinders, are forced into the mixing chamber in such proportions as are necessary to produce the proper quality of gas When the generator is newly filled the evaporation is very rapid, producing a heavy vapor entirely unsuitable for open or incandescent burners. As the richness of the gasolene is reduced, its density decreases until the generator is practically empty. To secure a uniform quality of gas under these varying conditions is the function of the mixer; the operation is very simple and positive. The mixer is filled with water to the water line (as shown in cut), which forms a seal, retaining the air and gas in the upper part of the cylinders until the consumption of gas at the burners allows the cylinders to revolve, and the gas and air are displaced by the water and forced into the mixing chamber, where they combine.

Each cylinder is provided with a pin-studded circular disc, into which mesh sliding pinions on a common shaft. When the gas supplied by the generator is heavy, more air is required to qualify it than when it becomes lighter as the gasolene is used up. As more or less air is thus required, the sliding pinions are moved to the right or left on the circular discs, and thus a range of from ten to eighty-four per cent. of air can be added to the gas from the generator before it leaves the mixing chamber. While the circular disc provides for such wide range, the pinions are required to be shifted only occasionally, ordinarily not more than once a month.

When a certain percentage of air is necessary (say seventy-two per cent.) after newly filling the generator, the air cylinder pinion is meshed into the third circle of pins, and the gas cylinder pinion is meshed into the outer circle of pins. The air cylinder then revolves at a greater speed than the gas cylinder, or, to be exact, at a ratio of 72 to 28, thus forcing into the mixing chamber 72 per cent. of air to 28 per cent. of gas. Such changes require but a moment's time and result in a practically smokeless and odorless gas.

The quantity of gasolene in the generator is indicated at all times by the percentage of air required. The simplicity of the mixer, its positive action, and the ease with which the quality of the gas can be regulated preclude any possibility of its becoming inoperative, and always insure a perfect and uniform quality of gas. Every part of our mixer that comes in contact with the water is composed entirely of brass or copper The discs and pinions are of cast brass. There are no floats, diaphragms, or regulating valves to get out of order.

We keep constantly on hand a supply of pure spirits gasolene for gas machines, as well as low grade naphthas for automobiles, gas stoves, and gas engines. Orders should specify the gravity wanted or purpose for which the gasolene is required. We allow market prices for empty gasolene barrels when returned in good order.

WALWORTH GAS MACHINES AND MIXERS.

PIPING.

All pipes should have a slight descending inclination towards the main riser; all branches should be taken out of the *side or top* of the running pipe, rather than the bottom. Pipes leading to brackets should *come up* from below, rather than down to the brackets.

To parties who are building we recommend putting in pipes for gas, as it can be done at a trifling expense while the building is in progress. They can be introduced after the building is completed, but the expense will be greater than if put in while the building is in process of construction.

We shall take pleasure in advising as to the best manner of putting in pipes and other details relating thereto.

The general rules and regulations of gas companies, in regard to the dimensions of pipes, etc., are applicable to this gas, with the single exception that the dimensions of pipes should be *one size larger* through the scale.

The following is the *correct* scale required for gas machines:

SIZE OF PIPING.	GREATEST LENGTH ALLOWED.	GREATEST NO. OF BURNER.
⅜ inch.	20 feet.	2
½ „	30 „	4
¾ „	50 „	15
1 „	70 „	25
1¼ „	100 „	40
1½ „	150 „	70
2 „	200 „	140
2½ „	300 „	225
3 „	400 „	300
4 „	500 „	500

FOR MECHANICAL PURPOSES.

For Laundries, Singeing Machines, Brazing Furnaces, and Laboratories our machines are unequaled. Where power is available a fan blower can be substituted for our air pump, which will considerably reduce the cost of the plant and produce most satisfactory results.

GASOLENE GAS SUNDRIES.

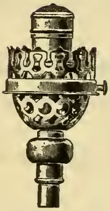


FIG. 893 A.
CLIMAX.
BURNER NO. 33.

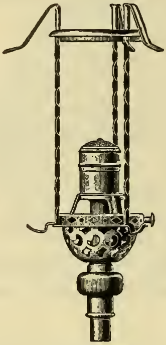


FIG. 893 B.
CLIMAX.
BURNER NO. 34.

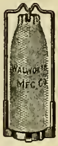


FIG. 893 C.
WALWORTH.

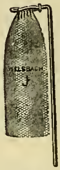


FIG. 893 D.
WELSBACH.
NO. 169.

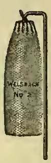


FIG. 893 E.
WELSBACH.
NO. 2.

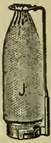


FIG. 893 F.
WELSBACH.
NO. 197.

GASOLENE INCANDESCENT BURNERS AND MANTLES.

FIG.	893 A	893 B	893 C	893 D	893 E	893 F
EACH	1.30	1.30	.40	.60	.34	.60

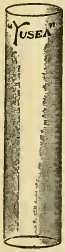


FIG. 893 H.
"YUSEA"
CHIMNEY.

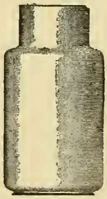


FIG. 893 J.
CYLINDER
CHIMNEY.

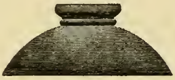


FIG. 893 K.
DOME
SHADE. 10".

FIG. 893 L.
BOBESCHE
SHADE.

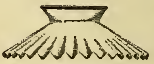


FIG. 893 M.
NO. 74. 8".

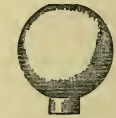


FIG. 893 P.
5½".
OPAL GLOBE.

GASOLENE CHIMNEYS AND SHADES.

FIG.	893 H	893 J	893 K	893 L	893 M	893 P
EACH	.30	.20	.40	.18	.20	.24

GASOLENE GAS SUNDRIES.

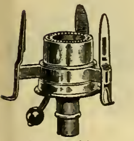


FIG. 893½.,

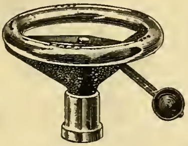


FIG. 893½A.

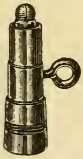


FIG. 893½B.

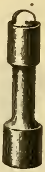


FIG. 893½C.

GASOLENE BURNERS.

Fig. 893½.	Argand C Burners	Per Dozen	4.50
Fig. 893½ A.	Ring Burners, with switch	Per Dozen	7.00
Fig. 893½ B.	Clough's Patent Burner, solid tips	Per Dozen	5.50
Fig. 893½ C.	Mixer Burners, nickel plated	Per Dozen	6.50

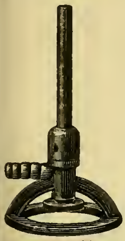


FIG. 893½D.

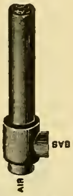


FIG. 893½E.

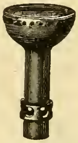


FIG. 893½F.
JONES' BRASS HEATER.

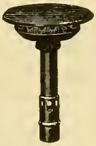


FIG. 893½H.
NOVELTY HEATER.

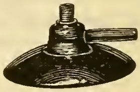
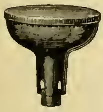


FIG. 893½J.
NOVELTY STAND.

GASOLENE HEATERS.

Fig. 893½ D.	Burners	Each	1.50
Fig. 893½ E.	Gatling Blast Burners	Each	5.00
Fig. 893½ F.	Jones' Brass Heaters	Each	1.00
Fig. 893½ H.	Novelty Heaters	Each	.30
Fig. 893½ J.	Stands for Novelty Heaters	Each	.30



G. 893½K. JONES' IRON HEATER.

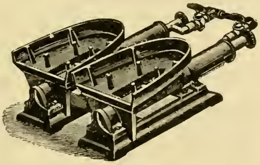


FIG. 893½L. FLAT-IRON HEATER.

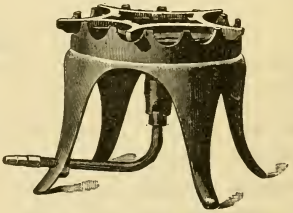


FIG. 893½M. JONES' BURNER, WITH STAND.

GASOLENE HEATERS.

Fig. 893½ K.	Jones' Iron Heaters, No. 4	Each	1.00
Fig. 893½ L.	Flat-iron Heaters	Each	8.00
Fig. 893½ M.	Jones' Burners, with stands	Each	3.60

GAS FIXTURE FITTINGS.

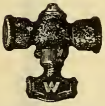


FIG. 894. STRAIGHT PENDANT COCK.

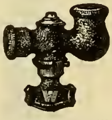


FIG. 895. ELBOW PENDANT COCK.

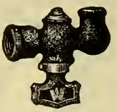


FIG. 896. SIDE PENDANT COCK.

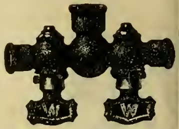


FIG. 897. DOUBLE CENTRE.

GAS FIXTURE FITTINGS.

SIZE	3/8	3/8 x 1/4	3/8 x 1/8	1/4	1/4 x 1/8	1/8
FIG. 894. MEDIUM ....PER DOZ.	4.90	4.55	4.55	4.55	4.25	3.90
FIG. 894. EXTRA HEAVY......PER DOZ.	7.15	6.85	6.80	6.85	6.50	6.15
FIG. 895. MEDIUM.........PER DOZ.	....	5.20	5.20	5.20	4.90	....
FIG. 895. EXTRA HEAVY......PER DOZ.	7.80	7.80	7.80	....	7.50	....
FIG. 896. MEDIUM.........PER DOZ.	....	5.20	5.20	5.20	4.90	....
FIG. 896. EXTRA HEAVY......PER DOZ.	7.80	7.80	7.80	....	7.50	....
FIG. 897. MEDIUM.........PER DOZ.	10.25	9.10	9.10	....	8.45	....
FIG. 897. EXTRA HEAVY......PER DOZ.	13.65	13.65	13.65	....	13.65	....

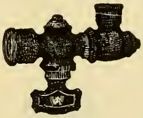


FIG. 898. SWING PENDANT COCK.

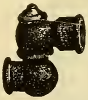


FIG. 899. SWING JOINT.

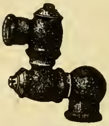


FIG. 900. UNIVERSAL SWING.

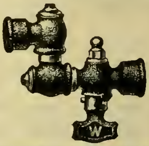


FIG. 901 A. UNIVERSAL SWING JOINT WITH COCK.

GAS FIXTURE FITTINGS.

SIZE	3/8	3/8 x 1/4	3/8 x 1/8	1/4	1/4 x 1/8	1/8
FIG. 898. MEDIUM.........PER DOZ.	8.15	8.15	7.80	7.50	7.15	7.15
FIG. 898. EXTRA HEAVY......PER DOZ.	10.40	10.40	10.40	....	....	....
FIG. 899. MEDIUM.........PER DOZ.	6.20	5.55	5.20	4.90	4.55	4.25
FIG. 899. EXTRA HEAVY......PER DOZ.	9.45	8.45	....	....	....	....
FIG. 900. MEDIUM........ PER DOZ.	9.10	8.80	8.80	8.45	8.15	7.80
FIG. 900. EXTRA HEAVY......PER DOZ.	14.00	13.00	....	12.35	12.35	....
FIG. 901 A. MEDIUM.......PER DOZ.	13.00	12.35	12.05	....	....	....
FIG. 901 A. EXTRA HEAVY....PER DOZ.	16.90	15.60	....	....	....	....

GAS FIXTURE FITTINGS.

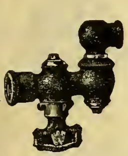


FIG. 901½.
SWING JOINT, WITH COCK.

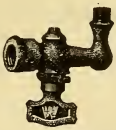


FIG. 902.
ELL BURNER COCK.

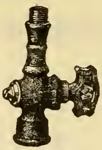


FIG. 903.
PILLAR COCK.

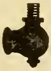


FIG. 904.
SIDE NOZZLE.

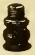


FIG. 905.
STRAIGHT NOZZLE.

GAS FIXTURE FITTINGS.

SIZE	3/8	3/8 x 1/4	3/8 x 1/8	1/4 x 1/8	1/8
FIG. 901½. MEDIUM PER DOZ.	9.45	9.45	9.45	8.80	....
FIG. 901½. EXTRA HEAVY PER DOZ.	15.60	14.30	13.00	....	....
FIG. 902. MEDIUM PER DOZ.	....	....	5.20	4.55	4.25
FIG. 902. EXTRA HEAVY PER DOZ.	....	....	7.80	7.15	....
FIG. 903. MEDIUM PER DOZ.	....	....	4.55	4.25	3.90
FIG. 903. EXTRA HEAVY PER DOZ.	....	....	6.50	6.20	....
FIG. 904. MEDIUM PER DOZ.	....	....	....	1.65	1.00
FIG. 904. EXTRA HEAVY PER DOZ.	....	....	....	2.20	1.95
FIG. 905. MEDIUM PER DOZ.	....	....	....	1.65	1.00
FIG. 905. EXTRA HEAVY PER DOZ.	....	...	...	1.95	1.82

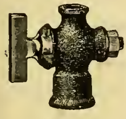


FIG. 906.
LAMP POST COCK.

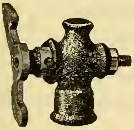


FIG. 907.
WITH LEVER.

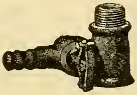


FIG. 908.
INDEPENDENT COCK.

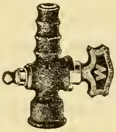


FIG. 908 A.
STRAIGHT
HOSE COCK.

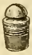


FIG. 909.

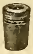


FIG. 910.

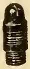


FIG. 911.

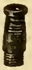


FIG. 912.

GAS FIXTURE FITTINGS.

SIZE	3/4 x 1/8	1/2 x 1/8	3/8 x 1/8	3/8	1/4	1/8
FIG. 906. MEDIUM PER DOZ.	6.55	5.85	5.55	..	....	....
FIG. 907. MEDIUM PER DOZ.	7.80	7.15	6.50	...	....	....
FIG. 908. MEDIUM PER DOZ.	....	...	...	6.50	....	...
FIG. 908 A. MEDIUM PER DOZ.	..	...	..	4.90	4.55	4.25

LAVA TIPS.

FIG. 909. BAT WING PER GROSS	1.50
FIG. 910. FISH TAIL PER GROSS	2.00

IRON TIPS.

FIG. 911. BAT WING PER GROSS	2.50
FIG. 912. FISH TAIL PER GROSS	2.50

GAS FIXTURE FITTINGS.

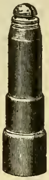


FIG. 913.

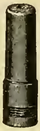


FIG. 914.

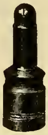


FIG. 915.

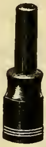


FIG. 916.

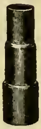


FIG. 918.

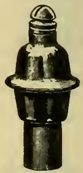


FIG. 919.

PILLARS AND BURNERS.

FIG. 913. DOUBLE LAVA TIP BURNERS.......PER CROSS	18.00
FIG. 914. BRASS BURNERS.......PER CROSS	4.50
FIG. 915. IRON BURNERS, BATWING.......PER CROSS	5.50
FIG. 915. IRON BURNERS, BATWING, 1-2, 3-4, AND 1 FT.......PER CROSS	9 00
FIG. 916. IRON BURNERS, FISH TAIL.......PER CROSS	5.50
FIG. 918. BRASS PILLARS, FOR LAVA TIPS.......PER CROSS	1.50
FIG. 919. HEAVY BASE GLOBE BURNERS, WITH TIPS.......PER CROSS	10.50
FIG. 919. HEAVY BASE GLOBE BURNERS, WITHOUT TIPS.......PER CROSS	9.00

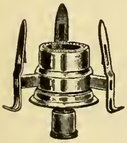


FIG. 920

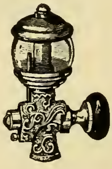


FIG. 922.

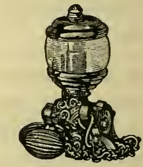


FIG. 923.

BURNERS.

FIG. 920. ARGAND A, OPEN HOLDER.......PER DOZ.	4.00
FIG. 922. ECONOMIC SELF-LIGHTING BURNER.......PER DOZ.	6.00
FIG. 923. ECONOMIC SELF-LIGHTING BURNER.......PER DOZ.	6.00

GAS FIXTURES.

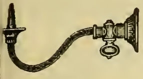


FIG. 934

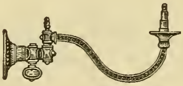


FIG. 935.

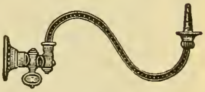


FIG. 936.

GAS BRACKETS.

Fig. 934.	C Bend Bracket, ⅜ inch, Stiff	No. 112	Each	.40
Fig. 935.	C Bend Single Swing Bracket, ⅜ inch	No. 110	Each	.60
Fig. 936.	S Bend Single Swing Bracket, ⅜ inch	No. 108	Each	.60

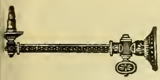


FIG. 937.

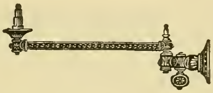


FIG. 938.

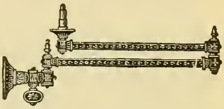


FIG. 939.

GAS BRACKETS.

Fig. 937.	Straight Bracket, Stiff, ⅜ inch	No. 113	Each	.40
Fig. 938.	Single Swing Straight Bracket, ⅜ inch	No. 100	Each	.50
Fig. 939.	Double Swing Straight Bracket, ⅜ inch	No. 102	Each	.80

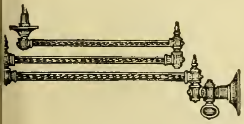


FIG. 940.

WALWORTH
1842
–
1902
MFG. CO.

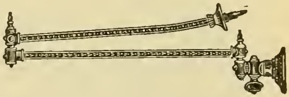


FIG. 941.

GAS BRACKETS.

Fig. 940.	Three Swing Straight Bracket, ⅜ inch	No. 104	Each	1.15
Fig. 941.	Double Swing Straight Bracket, Universal, ⅜ inch	No. 106	Each	1.15

GAS FITTERS' SUNDRIES.

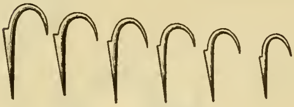


FIG. 942. GAS HOOKS.

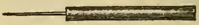


FIG. 943. FISH TAIL BURNER CLEANER.

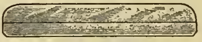


FIG. 944. BURNER CLEANER.

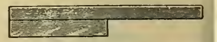


FIG. 945. BURNER CLEANER.

GAS HOOKS.—FIG. 942.

SIZE	$\frac{1}{4}$	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{3}{4}$	1	$1\frac{1}{4}$	$1\frac{1}{2}$	2
PER 100	.23	.28	.33	47	.60	.75	.95	1.25

BURNER CLEANERS.

FIG. 943	PER GROSS	3.00
FIG. 944	PER GROSS	7.20
FIG. 945	PER GROSS	2.00

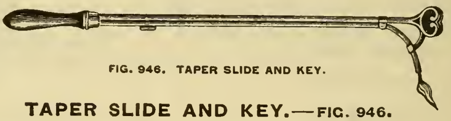


FIG. 946. TAPER SLIDE AND KEY.

TAPER SLIDE AND KEY.—FIG. 946.

Fig. 946, Complete	Per Dozen	10.00
Wax Tapers	Per Box	.20

GAS FITTERS' CEMENT.

Per Pound	20c

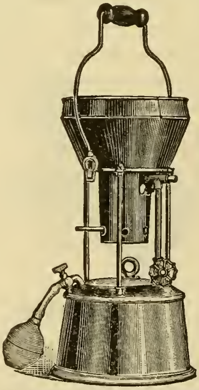
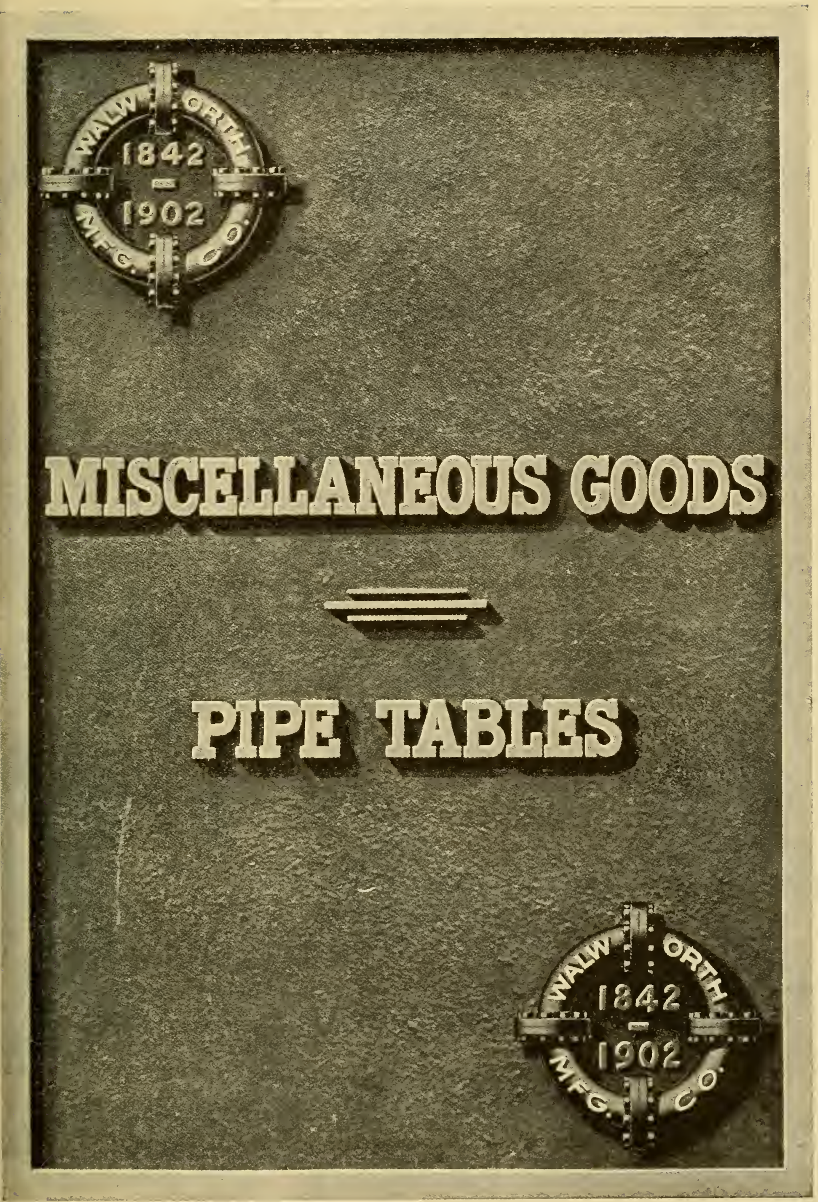


FIG. 947. PLUMBERS' BLAST FURNACE.

PLUMBERS' BLAST FURNACES.—FIG. 947.

Fig. 947. Weight, 7 pounds	Each,	$6.00



MISCELLANEOUS GOODS

PIPE TABLES

PUMPS.

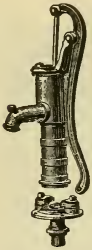


FIG. 949. CISTERN PUMP.
PLATE 264.

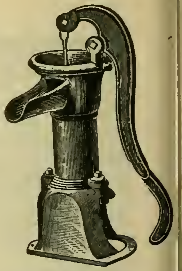


FIG. 950., PITCHER SPOUT PU
PLATE 120.

CISTERN PUMPS.—FIG. 949.

NO.	0	1	2	3	4	5	6	8	10
SIZE CYLINDER	2	2¼	2½	2¾	3	3¼	3½	4	4½
LENGTH STROKE	3¾	5	5	6¾	6¾	7¼	7¼	7¾	7½
FOR PIPE	¾	¾ or 1	1 or 1¼	1¼ or 1½	1½ or 1¾	1¾ or 2	2 or 2¼	2 or 2½	2½ or
EACH	3.50	4.00	4.50	5.00	5.50	6.50	8.00	10.00	12.0

PITCHER SPOUT PUMPS.—FIG. 950.

NO.	1	2	3	4	5	6
SIZE CYLINDER	2½	3	3½	4	4½	5
LENGTH STROKE	4½	4¼	4	4½	4½	4¾
FOR PIPE	¾ or 1	1 or 1¼	1¼ or 1½	1½ or 1¾	2 or 2½	2½ or 3
EACH	4.25	4.75	5.25	6.25	9.50	17.00

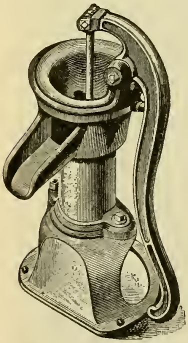


FIG. 951 CLOSE TOP PLATE 272

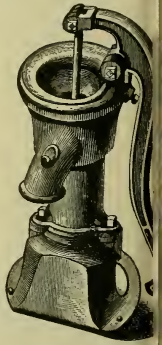


FIG. 952. WITH ROUND SPOUT PLATE :

PITCHER SPOUT PUMPS.—FIGS. 951 AND 952.

NO.	1	2	3	4
SIZE CYLINDER	2½	3	3½	4
LENGTH STROKE	4½	4¼	4	4½
EACH	4.25	4.75	5.25	6.25

PUMPS.

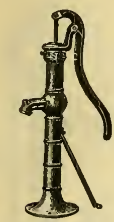


FIG. 953. WELL PUMP STANDARD.
PLATE 387.

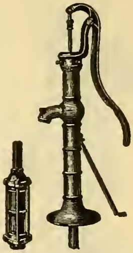


FIG. 954., TIGHT TOP WELL PUMP.
PLATE 325.

PUMP STANDARDS.—FIG. 953.

NO.	1	2	
HEIGHT INCHES	29	32	
EACH	5.00	5.50	

TIGHT TOP WELL PUMPS.—FIG. 954.

SIZE OF CYLINDER	2½	2¾	3	3½
EACH	8.25	8.75	9.25	9.75

Height of Standard 35 inches, stroke 6 inches.

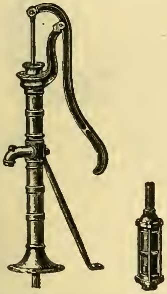


FIG. 955. DRIVE WELL PUMP.
PLATE 226.

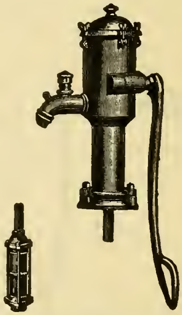


FIG. 956. PENDULUM FORCE PUMP.
PLATE 210.

DRIVE WELL PUMPS.—FIG. 955.

SIZE OF CYLINDER	2½	2¾	3	3¼
NO. 0. STANDARD EACH	8.00	8.25	8.50	8.75
NO. 1. STANDARD EACH	8.50	8.75	9.00	9.25

No. 0. Height of Standard 31 inches, stroke 6¼ inches.
No. 1. Height of Standard 35 inches, stroke 6¼ inches.

PENDULUM FORCE PUMP.—FIG. 956
WITH SET LENGTH.

SIZE OF CYLINDER	2½	2¾	3	3¼
EACH	15.00	15.25	15.50	16.00

If wanted with cock add $2.50 to list.

PUMPS.

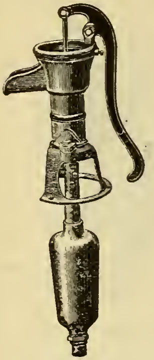


FIG. 957. PLATE 8.
DRIVE WELL PITCHER PUMP.

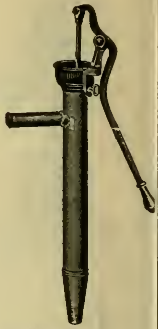
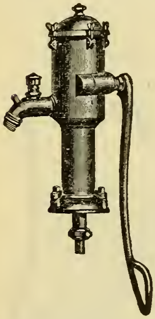


FIG 958. PLATE 313.
IMPROVED COPPER PUMP.

DRIVE WELL PITCHER SPOUT PUMPS.—FIG. 957.

ALL FOR 1 1-4 PIPE.

NO.	1	2	3	4
SIZE CYLINDER	2½	3	3½	4
WITHOUT AIR BARREL ... EACH	4.25	4.75	5.25	5.75
WITH AIR BARREL ... EACH	7.25	7.75	8.25	8.75



IMPROVED COPPER PUMPS.—FIG. 958.

NO.	1	2	3
SIZE CYLINDER	2½	2¾	3
EACH	6.12	6.50	6.88

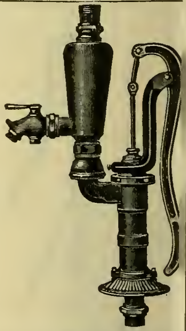


FIG. 959. PLATE 209.
PENDULUM FORCE PUMP.

FIG. 960. PLATE 157.
HAND FORCE PUMP.

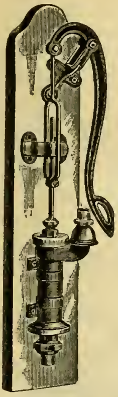
PENDULUM FORCE PUMPS.—FIG. 959.

NO.	00	0	1	2
SIZE CYLINDER	2	2½	3¼	4
LENGTH STROKE	4	4½	6	7¼
FOR PIPE	1	1	1¼	1½
EACH	9.00	10.00	12.00	20.00
WITH COCK IN SPOUT		12.00	15.00	25.00

HAND FORCE PUMPS.—FIG. 960.

NO.	0	1	2	3	4	6
SIZE CYLINDER	2	2¼	2½	2¾	3	3½
LENGTH STROKE	4	4	5	5¼	5¼	5½
FOR PIPE	¾	¾ or 1	1 or 1¼	1¼ or 1½	1½ or 1¾	1¾ or 2
EACH	10.50	11.25	12.50	13.50	14.50	18.00

PUMPS.



G. 961. HOUSE FORCE PUMP.
PLATE 3.

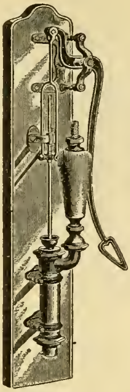


FIG. 962. HOUSE FORCE PUMP.
PLATE 72.

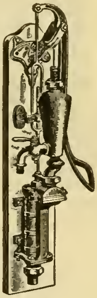
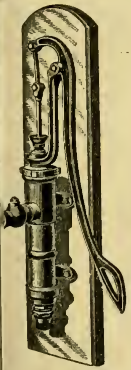


FIG. 963. HOUSE FORCE PUMP.
PLATE 233.

HOUSE FORCE PUMPS.

NO.	0	1	2	3	4	5	6	8
SIZE CYLINDER	2	2¼	2½	2¾	3	3¼	3½	4
FIG. 961. IRON ... EACH	....	14.50	15.00	15.75	16.50	20.00	22.00	32.00
FIG. 961. BRASS CYLINDER ... EACH	....	22.00	25.00	28.00	34.00	37.00	47.00	57.00
FIG. 962. BRASS CYLINDER ... EACH	24.00	....	28.00	31.00	....	....	....	....
FIG. 963. IRON ... EACH	....	18.50	21.50	24.00	26.50	30.00	33.50	48.00
FIG. 963. BRASS CYLINDER ... EACH	....	28.50	33.50	39.50	45.00	64.00	78.00	104.00



G. 964. HAND BOILER FEED PUMP.
PLATE 41.

HAND BOILER FEED PUMPS.—FIG. 964.

Fig. 964. No. 1. 2″ Bore.................$12.00
No. 2. 2½″ Bore, 5″ Stroke, for 1¼ Pipe, Each.................. 14.00

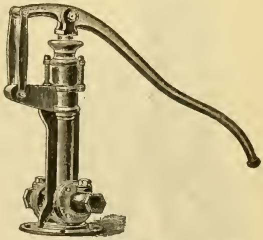


FIG. 965. PRESSURE TEST PUMP.
PLATE 334.

PRESSURE TEST PUMPS.—FIG. 965.

No. 1. 1¼ Piston.......................................Each, $25.00
No. 2. 1½ Piston.......................................Each, 30.00

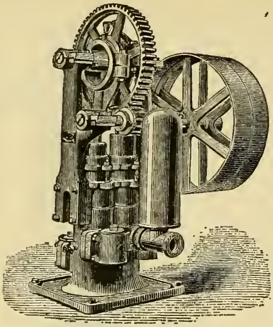


FIG. 965 A. ECONOMIC POWER PUMP.

ECONOMIC POWER PUMPS.—FIG. 965 A.

No.	Size of Plunger.	Length of Stroke.	Gallons per Stroke.	Revolutions per Minute.	Size of Suction.	Size of Discharge.	Size of Pulleys	Geared	Price Complete.	With Cut-Gears.
0	2	2½	.07	20 to 60	1	1	12 x 2½	5 to 1	82.00	91.00
1	3	3½	.22	10 to 50	1½	1½	15 x 3	5 to 1	137.00	151.00
2	4½	4¾	.66	10 to 40	2½	2	20 x 4	5 to 1	192.00	212.00
3	6	6	1.47	10 to 30	3	2½	24 x 4¼	6 to 1	300.00	330.00
4	8	8	3.48	10 to 25	4	3½	30 x 7	5 to 1	.....	467.00
5	11	11	9.06	10 to 25	6	5	30 x 9	5 to 1	.....	.....

On the above list a stroke is the full revolution of large gear, or the working o each plunger once.

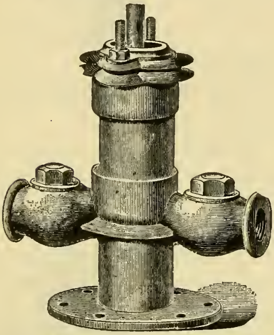


FIG. 965 B. WALWORTH'S POWER BOILER FEED PUMP.

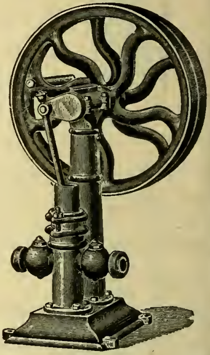


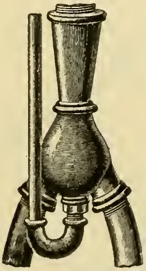
FIG. 965 C. COLUMN BOILER FEED PUMP

WALWORTH'S POWER BOILER FEED PUMPS.—FIG. 965 B.

DIAM. OF PLUNGER	1½	2	2½	3
EACH	15.00	20.00	25.00	35.00

COLUMN BOILER FEED PUMPS.—FIG. 965 C.

DIAM. OF PLUNGER	2	2	2½	3
LENGTH STROKE	3	6	6	6
EACH	30.00	70.00	75.00	80.00



LANSDELL'S STEAM SIPHON PUMPS.—FIG. 965 D.

	Diameter of Discharge.	Diameter of Steam.	Horse Power Required.	Capacity in Gallons per Minute.	PRICES. High Pressure.	PRICES. Low Pressure.
Double Suction	¾ in.	½ in.	1	30	8.00	10.00
	1 in.	¾ in.	1½	50	10.00	12.50
	1½ in.	1 in.	4	120	17.50	20.00
	2 in.	1¼ in.	6	200	22.50	25.00
	2½ in.	1½ in.	8	320	35.00	40.00
	3 in.	1½ in.	12	450	45.00	50.00
	4 in.	2 in.	25	800	65.00	75.00
	6 in.	2½ in.	50	1,800	150.00	175.00
Single Suction.	1¼ in.	1 in.	3	60	12.50	15.00

FIG. 965 D. LANSDELL'S SIPHON PUMP.

Larger sizes, with single suction pipe, on application. High Pressure Pump are constructed to work with 30 pounds, and upwards, of steam pressure, Lo Pressure from 30 to 15 pounds. Pumps to work below 15 pounds made to specia order.

PUMPS.

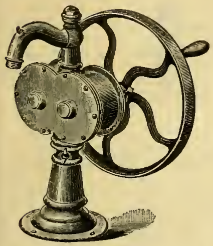


FIG. 966. HAND ROTARY PUMP. PLATE 347.

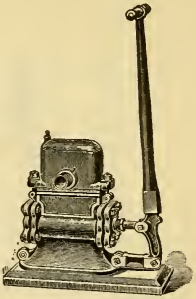


FIG. 967. HORIZONTAL FORCE PUMP. PLATE 236.

ROTARY PUMPS.—FIG. 966.

NO.	1	2	3	4	5
SIZE SUCTION	1¼	1¼	1½	1½	2
SIZE DISCHARGE	1	1	1¼	1½	2
*CAPACITY	13	14	17	27	36
IRON EACH	20.00	23.00	27.00	35.00	40.00
BRASS EACH	42.00	47.00	52.00	65.00	75.00

* Capacity at 100 revolutions per minute.

HORIZONTAL FORCE PUMPS.—FIG. 967.

SIZE CYLINDER	2½	3	4	5	6
LENGTH STROKE	4½	4½	5½	5¾	6
SIZE SUCTION	1¼	1½	2	2½	3
SIZE DISCHARGE	1¼	1¼	2	2	2½
BRASS LINED EACH	25.00	28.00	30.00	40.00	50.00

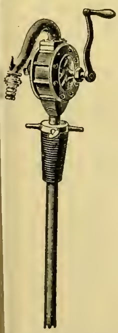


FIG. 968. ROTARY BARREL PUMP. PLATE 109.

ROTARY BARREL PUMP.—FIG. 968.

No.	Size Pipe.	Capacity per Revolution. Gallons.	Iron. Each.	Brass. Each.
NO. 1	1 inch	1⅒	18.00	42.00
NO. 2	1 inch	1½	25.00	60.00

AIR PUMPS.—FIG. 969.

Fig. 969. 2 inch Bore, 6 inch Stroke, each, $15.00.

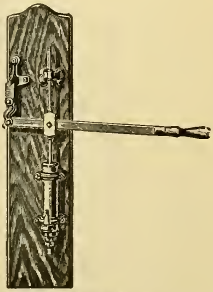


FIG. 969. AIR PUMP. PLATE 200.

PUMPS.

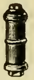


FIG. 970. SCREW CAP CYLINDER.

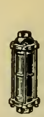


FIG. 971. BOLT CAP CYLINDER.

CYLINDERS.—FIGS. 970 AND 971.

SIZE CYLINDERS	2¼	2½	2¾	3	3¼	3½	4	4½
LENGTH	10	10	10	10	10	10	10	10
IRON EACH	4.00	4.35	4.70	5.00	6.00	7.00	9.00	12.50
BRASS LINED EACH	7.75	8.00	8.50	9.00	9.75	10.50	13.00	20.00

DEEP WELL CYLINDERS.

SIZE CYLINDER	2	2¼	2½	2¾	3	3¼	3½	4
LENGTH	16	16	16	16	16	16	16	16
IRON EACH	6.00	6.50	7.00	7.50	8.00	9.75	11.25	14.50
BRASS LINED EACH	9.00	9.75	10.25	10.75	11.25	12.00	13.50	17.50

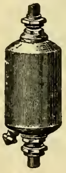


FIG. 972. SAND HOLDER.

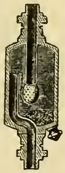


FIG. 972. SECTIONAL VIEW

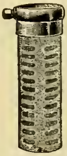


FIG. 973. STRAINER.

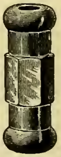


FIG. 974. ROD COUPLING.

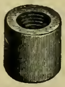


FIG. 975. DRIVE HEA

SAND HOLDERS AND WATER CHARGERS.—FIG. 972.

Fig. 972. With 1¼ connections, suitable for Nos. 1, 2, 3, and 4 Pumps .... Each $4.5

STRAINERS.—FIG. 973.

No. 1.	1 inch, Gauze covered	Each .50
No. 2.	1¼ inch, Gauze covered	Each .60
No. 3.	1½ inch, Gauze covered	Each .70
No. 4.	2 inch, Gauze covered	Each .80

MALLEABLE ROD COUPLINGS.—FIG. 974.

Fig. 974. Malleable Rod Couplings for ⅜ or 7/16 Rod .... Per lb., .40

DRIVE HEADS.—FIG. 975.

SIZE	1	1¼	1½	2	2½	3
STEEL EACH	1.45	1.45	1.80	2.50	4.00	6.30

PUMPS.

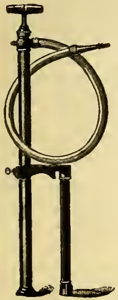


FIG. 976. AQUAPULT.

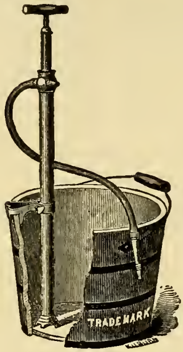


FIG. 977. JOHNSON'S CHAMPION PUMP.

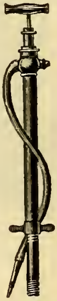


FIG. 978. JOHNSON'S DRIP PUMP.

Fig. 976.	Aquapult, with 3 feet Discharge Hose and Pipe, and Sprinkler	Each	5.00
Fig. 977.	Johnson's Champion Force Pump, with 3 feet Hose	Each	5.00
Fig. 978.	Johnson's Drip Pump, for Gas Companies, fitted for ¾ Pipe	Each	6.00

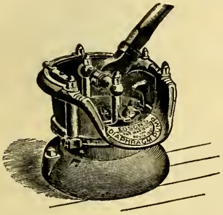


FIG. 979. EDSON'S PUMP, BOTTOM INLET.

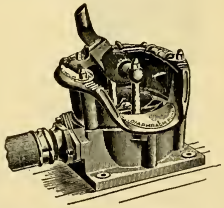


FIG. 980. EDSON'S PUMP, SIDE INLET.

EDSON'S DIAPHRAGM PUMPS.—FIGS. 979 AND 980.

No. 2. Bottom Inlet, 2½ inch. Each, $14.00. Side Inlet	Each	19.00
No. 3. Bottom Inlet, 3 inch. Each, $16.00. Side Inlet	Each	24.00
No. 4. Bottom Inlet, 4 inch. Each, $25.00. Side Inlet	Each	35.00
Suction Hose, 2½ inch	Per foot	1.25
Suction Hose, 3 inch	Per foot	1.50
Suction Hose, 4 inch	Per foot	2.25
Couplings, 2½ inch	Per set	2.75
Couplings, 3 inch	Per set	3.00
Couplings, 4 inch	Per set	8.75
Strainers, flat, 2½ inch		2.25
Strainers, flat, 3 inch		2.50
Strainers, globe, 2½ or 3 inch		3.50
Strainers, galvanized, 4 inch		2.50

Diaphragms No. 2, $2.00; No. 3, $2.00; No. 4, $2.90.

PUMPS.

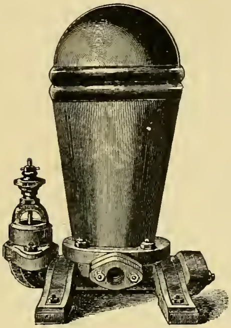


FIG. 981. HYDRAULIC RAM.

HYDRAULIC RAMS.—FIG. 981.

Size of Ram.	Quantity of water furnished per minute by spring or brook to which the Ram is adapted.	Length of Pipes.		Size of Pipes.		Price. Each.
		Drive.	Discharge.	Drive.	Discharge.	
No. 2	3 qts. to 2 gals. per min.	25 to 50 feet,	Any Length desired.	¾ in.	⅜ in.	9.00
„ 3	1½ gals. to 4 „ „			1 „	½ „	11.00
„ 4	3 „ to 7 „ „			1¼ „	½ „	14.00
„ 5	6 „ to 14 „ „			2 „	¾ „	22.00
„ 6	12 „ to 25 „ „			2½ „	1 „	40.00
„ 7	20 „ to 40 „ „			2½ 2¾ „	1¼ „	60.00
„ 10	25 „ to 75 „ „			4 „	2 „	150.00

With ten feet fall these Rams are successfully used to drive water 100 or 200 rods, to a position 100 or 200 feet above a level with the Ram.

NOS. 2 AND 3 GLASS RAMS.

Glass, of same capacity as No. 2. Iron ....Each	20.00
Glass, of same capacity as No. 3. Iron ....Each	25.00

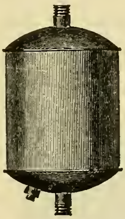


FIG. 982. VERTICAL SAND CHAMBER.

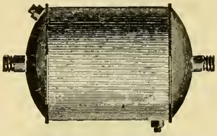


FIG. 983. HORIZONTAL SAND CHAMBER.

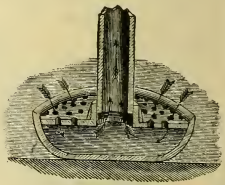


FIG. 984. MUSHROOM STRAINER.

PATENT SAND AND VACUUM CHAMBERS.—FIGS. 982 AND 983.

SIZE OF PIPE	1¼	1½	2	2½
EACH	7.00	10.00	25.00	45.00

These Chambers are made of heavy copper and warranted not to leak or collapse. In case any sand arise in the pipe, it is retained in the bottom of the Chamber, and can be removed by taking out the plug at th bottom, tripping the pump, and running water through it. Where there are two plugs, remove the smaller on at top, and run water through the opening to clean Chamber. This is seldom necessary, as in most cases th sand will not arise from the bottom of the pipe. No Driven Well is complete without one.

MUSHROOM STRAINERS.—FIG. 984.

MALLEABLE IRON.

SIZE	1	1¼	1½	2	2½	3	4	5	6	7	8	10
PLAIN .... EACH	.85	1.10	1.25	1.60	2.05	2.75	5.00	10.00	11.00	17.30	18.20	26.50
GALVAN'D.... EACH	1.00	1.35	1.50	2.00	2.50	3.40	6.00	12.50	13.60	22.25	23.30	32.00

DRIVE-WELL POINTS.

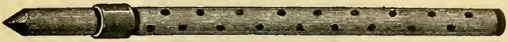


FIG. 985. LEWIS' PATENT DRIVE-WELL POINT.,

LEWIS' PATENT DRIVE-WELL POINTS.—FIG. 985.

1¼ Pipe, 2 feet long, Galvanized	Each	1.75
1½ Pipe, 2 feet long, Galvanized	Each	2.75
2 Pipe, 2 feet long, Galvanized	Each	4.25

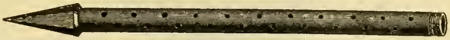


FIG. 986 A. WASHER POINTS.

WASHER POINTS.— FIG. 986 A.

No. 301. 1¼ Pipe, 2 feet long, 60 holes, No. 60 gauze	Each	3.00
No. 303. 1¼ Pipe, 3 feet long, 100 holes, No. 60 gauze	Each	4.67
No. 320. 1½ Pipe, 2 feet long, 80 holes, No. 60 gauze	Each	4.00
No. 322. 1½ Pipe, 3 feet long, 130 holes, No. 60 gauze	Each	6.00
No. 324. 2 Pipe, 2½ feet long, 140 holes, No. 60 gauze	Each	7.50

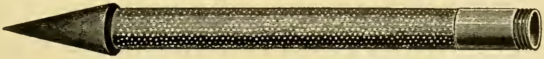
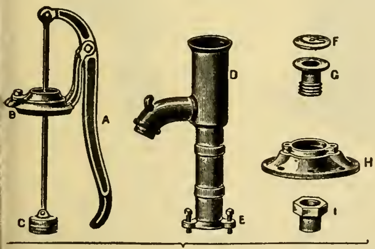
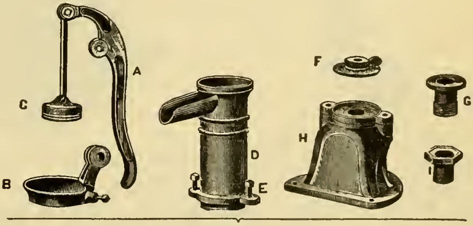


FIG. 988. OLMSTED'S BRASS JACKET DRIVE-WELL POINT.

OLMSTED'S BRASS JACKET DRIVE-WELL POINTS.—FIG. 988.

No. 74 1 Pipe, 2 feet long, 72 holes, No. 60 gauze	Each	2.76
No. 90. 1¼ Pipe, 2 feet long, 100 holes, No. 60 gauze	Each	3.00
No. 98. 1¼ Pipe, 3 feet long, 165 holes, No. 60 gauze	Each	4.67
No. 136. 1½ Pipe, 2 feet long, 120 holes, No. 60 gauze	Each	4.00
No. 164. 2 Pipe, 2½ feet long, 208 holes, No. 60 gauze	Each	7.50





CISTERN PUMP PARTS.—FIG. 989.

DESCRIPTION OF PARTS.—A—Brake. B—Stand. C—Pis-on and Rod. D—Cylinder. E—Base Set Screws. F—Valve complete). G—Brass Valve Seat. H—Flange. I—Coupling nd Solder Nipple or Tube.

PITCHER SPOUT PUMP PARTS.—FIG. 990.

DESCRIPTION OF PARTS.—A—Brake. B—Stand. C—Piston and Rod. D—Cylinder. E—Base Set Screws. F—Valve (complete). G—Brass Valve Seat. H—Base or Flange. I—Coupling and Solder Nipple or Tube.

When ordering parts of these Pumps, it will prevent mistakes if the terms we give are used. For corresponding parts of ther Pumps the same terms can be used, and will be understood by us.

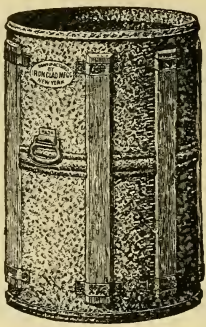

MANUFACTURED BY IRON CLAD MFG CO. NEW YORK

FIG. 991. GALVANIZED ASH CAN.

GALVANIZED ASH CANS.—FIG. 991.

WITH 8 WOOD STRAPS.

NO.	7	8	9	10
SIZE	15 x 26	17 x 26	18 x 26	20 x 26
EACH	5.25	6.00	6.25	7.00
COVERS EACH	.70	.80	.85	.90

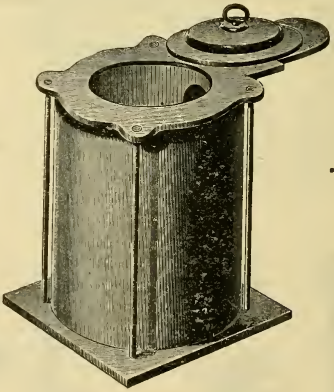


FIG. 903. WALWORTH BRASS FURNACE.

WALWORTH BRASS FURNACES.—FIG. 993.

WITHOUT LEGS OR LINING.

NO.	1	2	3
DIAMETER	14⅜	16¼	26
EACH	32.00	39.00	62.00

MISCELLANEOUS.

JOHNSON'S METALLIC PACKINGS.

FOR MALLEABLE UNIONS.

SIZE	¼	⅜	½	¾	1	1¼	1½	2
PER 100	.55	.55	.60	.65	.70	.85	1.00	1.35

RUSTLESS JOINT CEMENT.

The best material in the market for pipe joints. It is always ready for use, saves *Time*, *Labor*, and *Money*. It contains no poisons. Price 15c. per pound. One pound will cover as much surface as two pounds of lead or metallic.

STARINE METAL POLISH.

CANS	½ Pint.	1 Pint.	1 Quart.	1 Gallon.
EACH	.25	**.85**	**50**	**1.50**

In cases as follows: 24 ½ pint cans, 20 1 pint cans, 12 1 quart cans, 6 1 gallon cans.

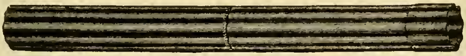
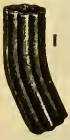


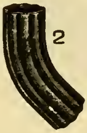
FIG. 996 A. CORRUGATED GALVANIZED CONDUCTOR.

CORRUGATED GALVANIZED CONDUCTOR.—FIG. 996 A.

SIZE	2	3	4	5	6
PER FOOT	13	15	.20	.25	.30



1



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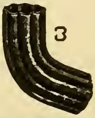
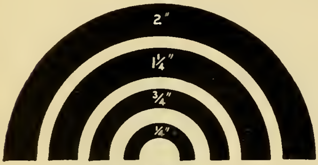


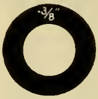
3

CORRUGATED GALVANIZED ELBOWS.

SIZE	2	3	4	5	6
NO. 1 PER DOZ.	3.00	3.60	4.80	7.20	8.64
NO. 2 PER DOZ.	3.00	3.60	4.80	7.20	8.64
NO. 3 PER DOZ.	3.00	3.60	4.80	7.20	8.64



EXTRA STRONG.



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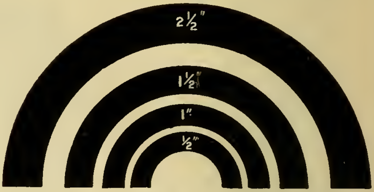

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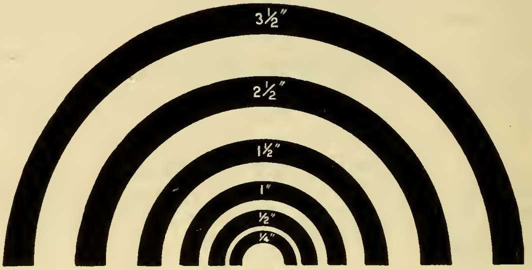
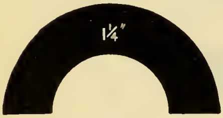
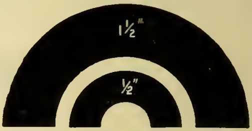


STANDARD.



DOUBLE EXTRA STRONG.



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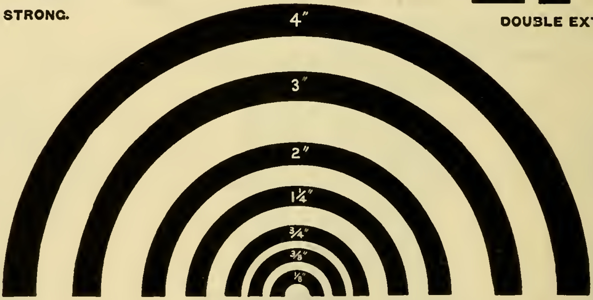

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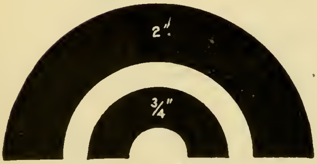

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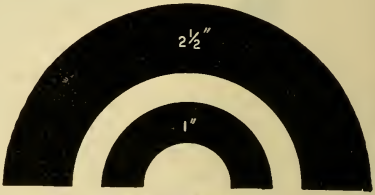


DOUBLE EXTRA STRONG.

DIAGRAMS SHOWING THICKNESS AND DIAMETER OF SOME SIZES OF WROUGHT-IRON PIPE.

CUSTOMS OF PIPE TRADE.

All sales are contingent upon strikes, accidents, and other delays unavoidable or beyond our control. All prices are subject to change without notice. All quotations are made for immediate acceptance unless otherwise stipulated.

Terms :— Net cash in thirty days, unless otherwise agreed upon.

All claims for corrections, reductions, or shortage must be made within ten days after receipt of goods.

All goods are guaranteed only so far as to replace any proving unsatisfactory

No charges for labor or expenses for any cause are allowed against goods rejected.

Shippers are not responsible for goods lost or damaged in transit; the carriers must be held in such cases

Orders should not be specified "same as last," but in detail.

Pipe is shipped in random lengths with threads and couplings (except extra and double extra strong, which are always "Plain Ends"), unless otherwise specified.

Extra charge is always made for pipe cut to specified lengths.

Pipe ordered cut to specified lengths, *with couplings*, is always measured to include couplings —*i. e.*, "over all" — unless otherwise designated.

Pipe ordered cut to exact lengths is always furnished with ends threaded unless otherwise specified -- this does not apply to extra strong and double extra strong pipe.

Couplings are not furnished with pipe ordered cut to specified lengths, unless so stipulated.

TABLE OF DIMENSIONS

OF

STANDARD WEIGHT WROUGHT-IRON PIPE.

1 1-4 and smaller Proved to 300 lbs. per Square Inch by Hydraulic Pressure.
1 1-2 and larger Proved to 500 lbs. per Square Inch by Hydraulic Pressure.

Inside Diameter.	Actual Outside Diameter.	Thickness.	Actual Inside Diameter.	Inside Circumference.	Outside Circumference.	Length of Pipe per square foot of inside surface.	Length of Pipe per square foot of outside surface.	Inside Area.	Outside Area.	Length of Pipe containing one cubic foot.	Weight per foot.	No. of threads per inch of screw.	Taper of threads per inch of screw.
Ins.	Inches.	Inches.	Inches.	Inches.	Inches.	Feet.	Feet.	Inches.	Inches.	Feet.	Lbs.		In.
⅛	0.405	0.068	0.270	0.848	1.272	14.15	9.44	0.0572	0.129	2500.	0.243	27	1/32
¼	0.54	0.088	0.364	1.144	1.696	10.50	7.075	0.1041	0.229	1385.	0.422	18	1/32
⅜	0.675	0.091	0.494	1.552	2.121	7.67	5.657	0.1916	0.358	751.5	0.561	18	1/32
½	0.84	0.109	0.623	1.957	2.652	6.13	4.502	0.3048	0.554	472.4	0.845	14	1/32
¾	1.05	0.113	0.824	2.589	3.299	4.635	3.637	0.5333	0.866	270.	1.126	14	1/32
1	1.315	0.134	1.048	3.292	4.134	3.679	2.903	0.8627	1.357	166.9	1.670	11½	1/32
1¼	1.66	0.140	1.380	4.335	5.215	2.768	2.301	1.496	2.164	96.25	2.258	11½	1/32
1½	1.90	0.145	1.611	5.061	5.969	2.371	2.01	2.038	2.835	70.65	2.694	11½	1/32
2	2.375	0.154	2.067	6.494	7.461	1.848	1.611	3.355	4.430	42.36	3.600	11½	1/32
2½	2.875	0.204	2.468	7.754	9.032	1.547	1.328	4.783	6.491	30.11	5.773	8	1/32
3	3.50	0.217	3.067	9.636	10.996	1.245	1.091	7.388	9.621	19.49	7.547	8	1/32
3½	4.00	0.226	3.548	11.146	12.566	1.077	0.955	9.887	12.566	14.56	9.055	8	1/32
4	4.50	0.237	4.026	12.648	14.137	0.949	0.849	12.730	15.904	11.31	10.66	8	1/32
4½	5.00	0.247	4.508	14.153	15.708	0.848	0.765	15.939	19.635	9.03	12.34	8	1/32
5	5.563	0.259	5.045	15.849	17.475	0.757	0.629	19.990	24.299	7.20	14.50	8	1/32
6	6.625	0.280	6.065	19.054	20.813	0.63	0.577	28.889	34.471	4.98	18.767	8	1/32
7	7.625	0.301	7.023	22.063	23.954	0.544	0.595	38.737	45.663	3.72	23.27	8	1/32
8	8.625	0.322	7.982	25.076	27.096	0.478	0.444	50.039	58.426	2.88	28.177	8	1/32
9	9.625	0.344	9.001	28.277	30.433	0.425	0.394	63.633	73.715	2.26	33.70	8	1/64
10	10.75	0.366	10.019	31.475	33.772	0.381	0.355	78.838	90.762	1.80	40.06	8	1/64
11	12.00	0.375	11.25	35.343	37.699	0.340	0.318	98.942	113.097	1.455	45.95	8	1/64
12	12.75	0.375	12.000	38.264	40.840	0.313	0.293	116.535	132.732	1.235	48.98	8	1/64
...	14.00	0.375	13.25	41.268	43.982	0.290	0.273	134.582	153.938	1.069	53.92	8	1/64
...	15.00	0.375	14.25	44.271	47.124	0.271	0.254	155.968	176.715	.923	57.89	8	1/64
...	16.00	0.375	15.25	47.274	50.265	0.254	0.238	177.867	201.062	.809	61.77	8	1/64
...	17.00	0.375	16.25	51.05	53.40	....	....	.....	.....	...	....	...	..
...	18.00	0.375	17.25	53.281	56.548	0.225	0.212	225.907	254.469	.638	69.66	...	..
...	20.00	0.375	19.25	59.288	62.832	0.202	0.191	279.720	314.160	.515	77.57	...	..
...	21.00	0.375	20.25	63.61	65.97	....	....	.....	.....	..	....	...	..
...	22.00	0.375	21.25	66.759	69.115	0.179	0.174	354.66	380.134	.406	85.47	...	..
..	24.00	0.375	23.25	73.04	75.39	0.164	0.159	424.56	452.39	.339	93.37	...	..

TABLE OF DIMENSIONS
OF
EXTRA STRONG WROUGHT-IRON PIPE.

Nominal Inside Diameter.	Actual Inside Diameter.	Actual Outside Diameter.	Thickness.	Inside Circumference.	Outside Circumference.	Length of Pipe per Square Foot of Inside Surface.	Length of Pipe per Square Foot of Outside Surface.	Inside Area.	Outside Area.	Nominal Weight per Foot.
Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Feet.	Feet.	Sq. Inches.	Sq. Inches.	Pounds.
⅛	.20	.40	.10	.64	1.27	18.63	9.43	.03	.12	.29
¼	.29	.54	.12	.92	1.69	12.98	7.07	.06	.22	.54
⅜	.42	.67	.12	1.32	2.12	9.07	5.65	.13	.35	.74
½	.54	.84	.14	1.70	2.63	7.04	4.54	.23	.55	1.09
¾	.73	1.05	.15	2.31	3.29	5.10	3.63	.45	.86	1.53
1	.95	1.31	.18	2.98	4.13	4.01	2.90	.71	1.35	2.17
1¼	1.27	1.66	.19	3.99	5.21	3.00	2.30	1.27	2.16	3.00
1½	1.49	1.90	.20	4.69	5.96	2.55	2.01	1.75	2.83	3.63
2	1.93	2.37	.22	6.07	7.46	1.97	1.60	2.93	4.43	5.02
2½	2.31	2.87	.28	7.27	9.03	1.64	1.32	4.20	6.49	7.67
3	2.89	3.50	.30	9.08	10.99	1.32	1.00	6.56	9.62	10.25
3½	3.35	4.00	.32	10.54	12.56	1.13	.95	8.85	12.56	12.47
4	3.81	4.50	.34	11.99	14.13	1.00	.84	11.44	15.90	14.97
4½	4.25	5.00	.35	13.35	15.71	.90	.76	14.18	19.63	17.60
5	4.81	5.56	.37	15.12	17.47	.79	.68	18.19	24.30	20.54
6	5.75	6.62	.43	18.06	20.81	.66	.57	25.93	34.47	28.58
7	6.62	7.62	.50	20.81	23.95	.58	.50	34.47	45.66	37.60
8	7.62	8.62	.56	23.56	27.10	.51	.44	44.18	58.42	47.85

Extra strong and double extra strong pipe is always shipped without Threads or Couplings, unless otherwise specified.

Threads and Couplings on extra strong pipe are always charged extra. Quotations will not cover them, unless they are clearly specified in requests for prices.

For prices see latest current lists.

TABLE OF DIMENSIONS
OF
DOUBLE EXTRA STRONG WROUGHT-IRON PIPE.

Nominal Inside Diam.	Actual Inside Diam.	Actual Outside Diam.	Thickness.	Inside Circumference.	Outside Circumference.	Length of Pipe per Sq. foot of Inside Surface.	Length of Pipe per Sq. Foot, of Outside Surface.	Inside Area.	Outside Area.	Nominal Weight per Foot.
⅜	.23	.67	.22	.73	2.12	15.69	5.65	.04	.36	.96
½	.24	.84	.29	.76	2.63	15.66	4.54	.04	.55	1.50
¾	.42	1.05	.31	1.32	3.29	9.04	3.63	.13	.86	2.30
1	.58	1.31	.36	1.84	4.13	6.50	2.90	.27	1.35	3.40
1¼	.88	1.66	.38	2.78	5.21	4.31	2.30	.61	2.16	5.00
1½	1.08	1.90	.40	3.41	5.96	3.51	2.01	.93	2.83	6.45
2	1.49	2.37	.44	4.68	7.46	2.56	1.60	1.74	4.43	9.00
2½	1.75	2.87	.56	5.51	9.03	2.17	1.32	2.41	6.49	13.30
3	2.28	3.50	.60	7.17	10.99	1.67	1.09	4.09	9.62	18.50
3½	2.71	4.00	.64	8.53	12.56	1.40	.95	5.79	12.56	22.00
4	3.13	4.50	.68	9.85	14.13	1.21	.84	7.72	15.90	27.48
4½	3.56	5.00	.72	11.20	15.71	1.05	.76	9.96	19.64	32.45
5	4.06	5.56	.75	12.76	17.47	.94	.68	12.69	24.30	38.12
6	4.87	6.62	.78	15.89	20.81	.78	.57	20.10	34.47	53.11
7	5.98	7.62	.82	18.83	23.95	.62	.50	28.16	45.66	60.34
8	6.88	8.62	.87	21.61	27.10	.56	.44	37.17	58.43	71.52

Extra strong and double extra strong pipe is always shipped without Threads or Couplings unless otherwise specified.

Threads and Couplings on extra strong and double extra strong pipe are always charged extra. Quotations will not cover them unless they are clearly specified in requests for prices.

For prices see latest current lists.

CIPHER CODE FOR WROUGHT-IRON PIPE.

NOTE.—In order to ensure correct interpretation of cipher messages, we have adopted the key-word "*Tremont*," which our customers will add at the end of each cipher message made up from the code below. Owing to the fact that a variety of cipher codes are in daily use with the trade, many of them containing identical words with different meanings, the importance of adding this key-word "*Tremont*" is obvious, and we trust our customers will not overlook it.

KEY-WORD, "TREMONT."

Number of Feet.

Feet	Code
25	Africa
50	Alabama
75	Cuba
100	Asia
200	Belgium
300	Chili
400	Denmark
500	Egypt
600	France
700	Germany
800	Holland
900	Ireland
1000	Japan
1500	Jersey
2000	Kentucky
2500	Kansas
3000	Liberia
3500	Lapland
4000	Maine
4500	Mexico
5000	Nevada
6000	Ohio
7000	Peru
8000	Russia
9000	Spain
10000	Texas
15000	Tennessee
20000	Uruguay
25000	Utah
50000	Venezuela
100000	Wyoming

Plain.

Size	Code
⅛	Allegheny
¼	Baltimore
⅜	Camden
½	Detroit
¾	Erie
1	Fairmount
1¼	Galena
1½	Harrisburg
2	Ithaca
2½	Jamestown
3	Kensington
3½	Lancaster
4	Macon
4½	Quincy
5	Newark
6	Oneida
7	Paris
8	Reading
9	Salem
10	Troy
11	Utica
12	Venice

Galvanized.

Size	Code
¼	Amazon
⅜	Bay
½	Colorado
¾	Danube
1	Elbe
1¼	Firth
1½	Ganges
2	Hudson
2½	Indus
3	Juniata
3½	Kanawha
4	Lake
4½	Miami
5	Nile
6	Osage
7	Po
8	Rhine
9	Seine
10	Tweed

FOR INQUIRING AND PURCHASING.

Questions.

Code	Meaning
Rabid	At what price can you furnish......?
Raccoon	At what price, and how soon, can you furnish......?
Race	How soon can you furnish?
Racket	Can you furnish from stock? If not, how long will it take to make?
Raft	Have you in stock? If not all, how many? (or much?)
Rail	When will you ship our order?
Raiment	Can you ship by......?
Rain	Can you furnish us promptly?
Ram	If so, enter order
Range	At what discount will you sell us......?
Rank	What discount for spot cash?
Rapid	Delivered in our city
Rascal	Will send particulars by mail
Raven	See letter
Rebate	If not satisfactory, telegraph at once
Recite	Please reply immediately by telegraph
Recline	Must have an answer by......
Record	Please answer our letter of the......
Redeem	Please answer our telegram of the......
Refit	May we accept order for......?
Reform	What is the lowest contract rate of freight you can obtain to......?
Regard	Get through rate of freight
Relax	What terms are required?

FOR ORDERING.

Code	Meaning
Abate	Ship via Rail.
Abridge	Ship via Steamer.
Abject	Ship via Express.
Accent	Ship via Sailing Vessel.
Advance	Ship via cheapest route.
Advent	Ship via quickest route.
Affix	Ship to-day, sure.
Again	Urgently needed, for repairs.
Aghast	Wanted at once. When will you ship? Answer by telegraph.
Allege	We are entirely out and urgently in want of
Allotting	In addition to previous order.
Alloy	Enter our order for......
Almanac	Duplicate order......
Alum	Duplicate order, if at .....
Amass	Ship the whole order in one lot.
Anchor	Have sent particulars by mail.
Ancient	Ship at once any portion of order.
Angel	Have sent shipping directions by mail.
Ankle	If you cannot ship by the time specified, advise by telegraph.
Appraise	Hasten shipment of......
Apricot	We are entirely out of......
Array	We must have......
Arrest	......order of the......
Arrow	Please alter our order to......
Artful	If not already executed, cancel......
Artist	Cancel balance of order......
Assay	Cancel order unless shipped by......
Assign	Send tracer for shipment order .... Urgently needed.
Astound	Suspend shipment of order of......inst.
Astray	Suspend work on order of ......inst., until further instructions
Atlas	Give preference over all others to order No.
Attic	Specifications to follow.
Augur	Telegraph No. of cars and route shipped.
Awkward	Ship what you have ready, and balance as soon as possible.

FOR INQUIRING AND PURCHASING.

Answers.

Code	Meaning
Sable	We can ship.
Sack	We can ship to-day.
Sacred	We can ship to-morrow.
Safe	We have all in stock, and can ship at once.
Saddle	We have in stock, and can furnish you at..........
Sage	We cannot ship.
Sail	We cannot ship before......
Saint	We have no......, but will ship the other sizes promptly.
Sake	We have none in stock.
Salad	We can ship......from stock, and the balance......
Sally	We can furnish
Salmon	We can furnish promptly
Saloon	We can furnish immediately
Salute	None of the goods you order are in stock.
Salve	We shipped
Sambo	We cannot furnish
Sand	Impossible for us to fill your order in the time specified.
Sauce	If ordered by telegraph promptly, we could ship in ......
Savage	If ordered immediately
Savant	If ordered immediately by wire
Savor	Immediately on receipt of order
Scale	On receipt of order
Scandal	After receipt of order
Scar	Will ship earlier if possible.
Scatter	We cannot promise definitely.
Scene	We quote you......discount on......
Sceptre	We quote
Scheme	We cannot change present discount.
School	Per cent. discount specifications named.
Scoff	F. O. B. cars......
Scold	For immediate acceptance.

STANDARD LAP WELDED CHARCOAL IRON BOILER TUBES.

Outside Diameter.	Standard Thickness.	Nearest Birmin'ham Wire Gauge Thickness.	Inside Diameter.	Inside Circumference.	Outside Circumference.	Length of Tube per Sq. Foot, Inside Surface.	Length of Tube per Sq. Foot, Outside Surface.	Inside Area.	Outside Area.	Nominal Weight per Foot.
Inches.	Inches.	Wire Gauge.	Inches.	Inches.	Inches.	Feet.	Feet.	Sq. Inches.	Sq. Inches.	Pounds.
1	.072	15	0.85	2.68	3.14	4.46	3.81	0.57	0.78	.70
1¼	.072	15	1.10	3.47	3.92	3.45	3.05	0.96	1.22	.90
1½	.083	14	1.33	4.19	4.71	2.86	2.54	1.39	1.76	1.24
1¾	.095	13	1.56	4.90	5.49	2.44	2.18	1.91	2.40	1.66
2	.095	13	1.80	5.66	6.28	2.11	1.90	2.55	3.14	1.91
2¼	.095	13	2.05	6.48	7.06	1.85	1.69	3.31	3.97	2.16
2½	.109	12	2.28	7.17	7.85	1.67	1.52	4.09	4.90	2.75
2¾	.109	12	2.53	7.95	8.63	1.50	1.39	5.03	5.94	3.04
3	.109	12	2.78	8.74	9.42	1.37	1.27	6.08	7.06	3.33
3¼	.120	11	3.01	9.46	10.21	1.26	1.17	7.12	8.29	3.96
3½	.120	11	3.26	10.24	10.99	1.17	1.09	8.35	9.62	4.28
3¾	.120	11	3.51	11.03	11.78	1.08	1.01	9.68	11.04	4.60
4	.134	10	3.74	11.75	12.56	1.02	.95	10.99	12.56	5.47
4½	.134	10	4.24	13.32	14.13	.90	.84	14.12	15.90	6.17
5	.148	9	4.72	14.81	15.70	.80	.76	17.49	19.63	7.58
6	.165	8	5.69	17.90	18.84	.67	.63	25.50	28.27	10.16
7	.165	8	6.65	20.91	21.99	.57	.54	34.80	38.48	11.90
8	.165	8	7.63	23.98	25.13	.50	.47	45.79	50.26	13.65
9	.180	7	8.61	27.05	28.27	.44	.42	58.29	63.61	16.76
10	.203	6	9.57	30.07	31.41	.39	.38	71.97	78.54	21.00
11	.220	5	10.56	33.17	34.55	.36	.34	87.47	95.03	25.00
12	.229	4½	11.54	36.26	37.69	.33	.31	103.74	113.09	28.50
13	.238	4	12.52	39.34	40.84	.30	.29	123.18	132.73	32.06
14	.248	3½	13.50	42.41	43.98	.28	.27	143.18	153.93	36.00
15	.259	3	14.48	45.49	47.12	.26	.25	164.71	176.71	40.60
16	.270	2½	15.45	48.56	50.26	.24	.23	187.66	201.06	45.20
17	.284	2	16.43	51.66	53.40	.23	.22	212.22	226.98	49.90
18	.292	1½	17.41	54.71	56.54	.21	.21	238.22	254.46	54.81
19	.300	1	18.40	57.80	59.69	.20	.20	265.90	283.52	59.47
20	.320	0½	19.36	60.82	62.83	.19	.19	294.37	314.15	66.76
21	.340	0	20.32	63.83	65.97	.18	.18	324.31	346.36	73.40

No Tubes kept in stock over 20 feet in length. For Tubes in excess of that length, 10 per cent. will be added to net of invoice.

No deduction for Tubes lighter than standard.

For prices on Boiler Tubes, Safe Ends, etc., see latest current lists.

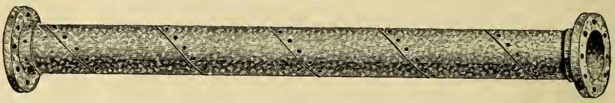
SPECIAL LAP WELDED STEEL LOCOMOTIVE TUBES.

Outside Diameter.	Standard Thickness.	Nearest Birmingham Wire Gauge Thickness.	Inside Diameter.	Inside Circumference.	Outside Circumference.	Length of Tube per Square Foot, Outside Surface.	Inside Area.	Outside Area.	Nominal Weight per Foot.
Inches.	Inches.	Wire Gauge.	Inches	Inches.	Inches.	Feet.	Sq. Inches.	Sq. Inches.	Pounds.
1	.083	14	.83	2.62	3.14	3.82	.54	.78	.81
1¼	.083	14	1.08	3.40	3.92	3.05	.92	1.22	1.03
1½	.095	13	1.31	4.11	4.71	2.54	1.34	1.76	1.42
1¾	.109	12	1.53	4.81	5.49	2.18	1.84	2.40	1.91
2	.109	12	1.78	5.59	6.28	1.91	2.49	3.14	2.20
2¼	.109	12	2.03	6.38	7.06	1.69	3.24	3.97	2.49
2½	.120	11	2.26	7.10	7.85	1.52	4.01	4.90	3.05
2¾	.120	11	2.51	7.88	8.63	1.38	4.94	5.94	3.37
3	.120	11	2.76	8.67	9.42	1.27	5.98	7.06	3.68

For prices on Boiler Tubes, Safe Ends, etc., see latest current lists.

DOUBLE GALVANIZED

SPIRAL RIVETED FLANGED PRESSURE PIPE.



MADE OF GALVANIZED IRON, AND RE-GALVANIZED AFTER FORMATION.

Inside Diameter.	Price per Foot Without Flanges.	Price for One Flange Attached to Pipe.	Thickness Birmingham Gauge.	Nominal Weight per Foot.
3	.44	.66	No. 20.	2 lbs.
4	.56	.87	„ 20.	2½ „
5	.70	1.11	„ 20.	3½ „
6	.94	1.32	„ 18.	4¼ „
7	1.00	1.77	„ 18.	5 „
8	1.17	1.98	„ 18.	6 „
9	1.30	2.64	„ 18.	6½ „
10	1.75	3.09	„ 16.	9½ „
12	2.31	3.55	„ 16.	12¼ „
14	3.00	4.43	„ 14.	17½ „
15	3.22	5.28	„ 14.	19½ „
16	3.49	7.50	„ 14.	20½ „
18	3 98	8.58	„ 14.	25 „
20	4.42	9.50	„ 14.	28½ „
22	6.33	15.43	„ 12.	33 „
24	6 90	16.51	„ 12.	40 „

Tested to 150 lbs. Hydraulic pressure. In lengths 20 feet and less.

GALVANIZED CAST IRON FITTINGS FOR GALVANIZED PRESSURE PIPE.

REDUCING FITTINGS, 10 PER CENT. EXTRA.

Diameter in Inches.	Elbows. 45° and 90°.	Tees.	Crosses or "Y" Bends.	Reducers.	Flanges.	Disks.	Bolts and Gaskets, per set.
3	1.60	2.35	4.15	....	.39	.45	.25
4	2.10	3.25	5.30	4.00	.52	.65	.42
5	2.85	4.40	6.70	5.00	.65	.78	.44
6	3.75	5.50	8.00	6.00	.78	1.17	.52
7	5.10	7.00	11.00	8.00	1.04	1.56	.54
8	6.50	9.30	13.75	9.50	1.17	1.82	.59
9	8.75	12.50	16.80	12.00	1.56	2.34	.67
10	10.00	15.20	21.00	13.50	1.82	2.47	.76
12	14.00	21.00	30.00	17.00	2.08	3.90	1.04
14	21.50	30.00	41.00	23.00	2.60	5.46	1.23
15	26.00	36.00	50.00	24.00	3.12	6.00	1.35
16	31.00	45.00	61.00	26.00	4.42	6.75	1 50
18	40 00	70.00	71.00	32.00	5.07	9 00	1.96
20	51.00	91.00	95.00	37.00	5.59	11.70	2.13

Connections with Wrought Iron Pipe readily made by means of Tapped Disks.
Flanges of Special O. D., and Drilling furnished at an additional cost for extra weight.

CAST-IRON WATER PIPE.

STANDARD WEIGHT.

SIZE	2	3	4	6	8	10	12	14	16	18	20	24	30	36
APPROXIMATE THICKNESS	5/16	7/16	15/32	1/2	1/2	17/32	9/16	11/16	3/4	27/36	27/32	15/16	1 1/8	1 1/4
APPROXIMATE WEIGHT PER FOOT	7	15	22	33	42	60	75	105	130	167	180	240	358	480

Tested to 300 lbs., Hydrostatic pressure, and coated inside and out. 2 inch in 9 ft. lengths; other sizes in 12 ft. lengths.

CAST-IRON GAS PIPE.

STANDARD WEIGHT.

SIZE	2	3	4	6	8	10	12	14	16	18	20	24	30	36
THICKNESS	5/16	11/32	7/16	7/16	7/16	1/2	9/16	9/16	9/16	5/8	5/8	11/16	7/8	1
APPROXIMATE WEIGHT PER FOOT	6	12½	17	28	38	54	70	85	110	134	140	180	255	325

Tested to 250 lbs., Hydrostatic pressure, not coated. 2 inch in 9 ft. lengths; other sizes in 12 ft. lengths.

TABLE OF LEAD AND HEMP REQUIRED TO PROPERLY CALK THE JOINTS OF DIFFERENT SIZES OF CAST-IRON PIPE.

SIZE	2	3	4	6	8	10	12	14	16	18	20	24	30	36
LEAD PER JOINT, POUNDS	1¾	4	5½	8	11	15	18	22	24	26	28	32	38	50
HEMP PER JOINT, OUNCES	2	6	7	9	11	13	18	20	22	24	28	32	38	44

LIST AND NOMINAL WEIGHTS OF

REGULAR CAST-IRON PIPE FITTINGS.

CROSSES.

Size.	Weight.	Size.	Weight.
3x 3x 3x 3	115	10x10x 4x 4	425
4x 4x 4x 4	145	12x12x12x12	600
6x 6x 6x 6	257	12x12x10x10	530
6x 6x 4x 4	244	12x12x 8x 8	488
8x 8x 8x 8	363	12x12x 6x 6	452
8x 8x 6x 6	315	12x12x 4x 4	430
8x 8x 4x 4	300	16x16x16x16	929
10x10x10x10	500	20x20x20x20	1397
10x10x 8x 8	478	24x24x24x24	2260
10x10x 6x 6	458		

ELBOWS.

Size.	Weight.	Size.	Weight.
3	50	12	375
4	67	16	600
6	120	20	742
8	190	24	1457
10	305	30	1800

PLUGS.

Size.	Weight.	Size.	Weight.
3	9	10	50
4	13	12	60
6	26	16	90
8	30		

SLEEVES.

Size.	Weight.	Size.	Weight.
3	32	16	236
4	50	20	393
6	95	24	620
8	125	30	845
10	170	36	1150
12	195		

TEES.

Size.	Weight.	Size.	Weight.
3x 3x 3	88	10x10x 4	335
4x 4x 4	110	12x12x12	460
6x 6x 6	212	12x12x10	431
6x 6x 4	205	12x12x 8	410
8x 8x 8	299	12x12x 6	390
8x 8x 6	275	12x12x 4	370
8x 8x 4	255	16x16x16	725
10x10x10	405	20x20x20	1100
10x10x 8	385	24x24x24	1850
10x10x 6	350		

REDUCERS.

Bell large end always sent unless specially ordered with bell on small end.

Size.	Weight.	Size.	Weight.
4x3	56	10x 4	95
6x4	85	12x10	190
8x6	108	12x 8	170
8x4	105	12x 6	151
10x8	137	16x12	300
10x6	112	24x20	690

45° ELBOWS.

Size.	Weight.	Size.	Weight.
3	42	12	325
4	63	16	407
6	110	20	545
8	160	24	1110
10	232	30	1300

Y BRANCHES.

All sizes from.......... 4 to 36 inches.

SPLIT SLEEVES.

All sizes from.......... 4 to 24 inches.

We can furnish all sizes and reductions in specials, from 2 to 36 inch. The above weights are not given as standard, but simply for the purpose of estimating.

All descriptions of Special Water Works Castings made to order. 3 to 16 inch sizes of Cast-Iron Water Pipe usually in stock.

IRON PIPE SIZES

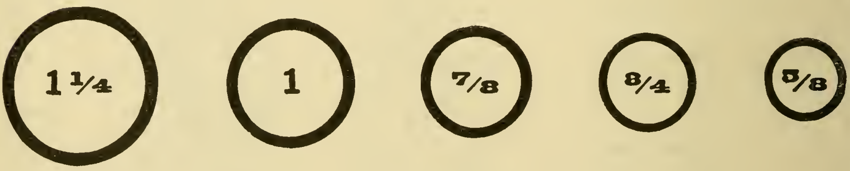
OF

SEAMLESS DRAWN BRASS AND COPPER TUBES.

WILL THREAD TO FIT IRON PIPE FITTINGS.

Iron Pipe Size.	Inside Diameter.	Outside Diameter.	Length Feet, about	Approximate Weight per Foot.	
				Brass.	Copper.
1/8	.27	13/32	12	.25	
1/4	.36	9/16	12	.43	
3/8	.49	11/16	12	.62	
1/2	.62	13/16	12	.92	
3/4	.82	1 1/16	12	1.25	
1	1.04	1 5/16	12	1.70	
1 1/4	1.38	1 5/8	12	2.50	
1 1/2	1.61	1 7/8	12	3.00	
2	2.06	2 3/8	12	4.00	
2 1/2	2.46	2 7/8	12	5.75	
3	3.06	3 1/2	12	8.30	
3 1/2	3.50	4	12	10.90	
4	4.02	4 1/2	12	12.70	
5	5.04	5.56	8 to 10	15.75	
6	6.06	6.62	6 to 8	18.31	
7	7.02	7.62	Special.	26.28	
8	7.98	8.62	Special.	29.88	

PLUMBERS' DRAWN BRASS PIPE.



FOR PLUMBING.

SIZE, OUTSIDE DIAMETER	5/8	3/4	7/8	1	1 1/4	1 1/2	1 3/4	2
PRICE PER FOOT	23	.26	.32	.38	50	58	65	75

The above tubes are made in 11 feet lengths, with coupling on one end.

USEFUL INFORMATION.

STEAM.

A CUBIC inch of water evaporated under ordinary atmospheric pressure is converted into 1 cubic *foot* of steam (approximately).

The specific gravity of steam (at atmospheric pressure) is .411 that of air at 34° Fahrenheit, and .0006 that of water at same temperature.

27,222 cubic feet of steam weigh one pound; 13,817 cubic feet of air weigh 1 pound.

Locomotives average a consumption of 3,000 gallons of water per 100 miles run.

The best designed boilers, well set, with good draft, and skilful firing, will evaporate from 7 to 10 lbs. of water per pound of first-class coal.

In calculating horse-power of Tubular or Flue boilers, consider 15 square feet of heating surface equivalent to one *nominal* horse-power.

On one square foot of grate can be burned on an average from 10 to 12 lbs. of hard coal, or 18 to 20 lbs. soft coal, per hour, with natural draft. With forced draft nearly double these amounts can be burned.

Steam Engines, in economy, vary from 14 to 60 lbs. of feed water and from 1½ to 7 lbs. of coal per hour per indicated H. P. See table below for duty of high grade engines.

Condensing engines require from 20 to 30 gallons of water, at an average low temperature, to condense the steam represented by every gallon of water evaporated in the boilers supplying engines — approximately for most engines, we say, from 1 to 1½ gallons condensing water per minute per indicated horse-power.

Surface Condensers should have about 2 square feet of tube [cooling] surface per horse-power for a compound steam engine. Ordinary Engines will require more surface according to their economy in the use of steam. It is absolutely necessary to place air pumps below condensers to get satisfactory results.

RATIO OF VACUUM TO TEMPERATURE (FAHRENHEIT) OF FEED WATER.

00 inches, Vacuum	212°	22½ inches, Vacuum	150°	28½ inches, Vacuum	92°
11 „ „	190°	*25 „ „	135°	29 „ „	72°
18 „ „	170°	27½ „ „	112°	29½ „ „	52°

*Usually considered the standard point of efficiency — Condenser and Air Pump being well proportioned.

WEIGHT AND COMPARATIVE FUEL VALUE OF WOOD.

1 Cord Air-dried Hickory or Hard Maple weighs about 4500 lbs., and is equal to about 2000 lbs. coal.
1 „ „ White Oak weighs about 3850 lbs., and is equal to about 1715 lbs. coal.
1 „ „ Beech, Red Oak, and Black Oak, weighs about 3250 lbs., and is equal to about 1450 lbs. coal.
1 „ „ Poplar (whitewood), Chestnut, and Elm, weighs about 2350 lbs., and is equal to about 1050 lbs. coal.
1 „ „ Average Pine weighs about 2000 lbs., and is equal to about 925 lbs. coal.

From the above it is safe to assume that 2¼ lbs. of dry wood is equal to 1 lb. average quality of soft coal, and that the full value of the same *weight* of different woods is very nearly the same — that is, a pound of hickory is worth no more for fuel than a pound of pine, assuming both to be dry. It is important that the wood be dry, as each 10 per cent. of water or moisture in wood will detract about 12 per cent. from its value as fuel.

DUTY OF STEAM ENGINES.

A well-known engineer of high authority gives the following comparative figures showing the economy of high grade steam engines in actual practice:

Type of Engine.	Temperature of Feed Water.	Lbs. of Water Evaporated per lb. or Cumberland Coal.	Pounds of Steam per I. H. P. used per hour.	Pounds of Cumberland Coal used per I. H. P. per hour.	Cost per I. H. P. per hour, supposing Coal at $6.00 per ton.
Non-Condensing	210°	10.5	29.	2.75	$0.0073
Condensing	100°	9.4	20.	2.12	0.0056
Compound Jacketed	100°	9 4	17.	1.81	0.0045
Triple Expansion Jacketed	100°	9.4	13.6	1.44	0.0036

⁂ The effect of a good condenser and air pump should be to make available about 10 lbs. more mean effective pressure, with the same terminal pressure; or to give the same mean effective pressure with a correspondingly less terminal pressure. When the load on the engine requires 20 lbs. M. E. P., the condenser does half the work; at 30 lbs., one third of the work; at 40 lbs., one fourth, and so on. It is safe to assume that practically the condenser will save from one fourth to one third of the fuel, and it can be applied to any engine, cut-off, or throttling, where a sufficient supply of water is available.

USEFUL INFORMATION.

WATER.

DOUBLING the diameter of a pipe increases its capacity four times. Friction of liquids in pipes increases as the square of the velocity.

The mean pressure of the atmosphere is usually estimated at 14.7 lbs. per square inch, so that with a perfect vacuum it will sustain a column of mercury 29.9 inches or a column of water 33.9 feet high at sea level.

To find the pressure in pounds per square inch of a column of water, multiply the height of the column in feet by .434. Approximately, we say that every foot elevation is equal to ½ lb. pressure per square inch; this allows for ordinary friction.

To find the diameter of a pump cylinder to move a given quantity of water per minute (100 feet of piston being the standard of speed), divide the number of gallons by 4, then extract the square root, and the product will be the diameter in inches of the pump cylinder.

To find quantity of water elevated in one minute running at 100 feet of piston speed per minute, square the diameter of the water cylinder in inches and multiply by 4. Example: Capacity of a 5 inch cylinder is desired The square of the diameter (5 inches) is 25, which, multiplied by 4, gives 100, the number of gallons per minute (approximately).

To find the horse power necessary to elevate water to a given height, multiply the weight of the water elevated per minute in pounds by the height in feet, and divide the product by 33,000 (an allowance should be added for water friction, and a further allowance for loss in steam cylinder, say from 20 to 30 per cent).

The area of the Steam Piston, multiplied by the steam pressure, gives the total amount of pressure that can be exerted. *The area of the water piston*, multiplied by the pressure of water per square inch, gives the resistance. *A margin* must be made between the *power* and the *resistance* to *move* the pistons at the required speed — say from 20 to 40 per cent., according to speed and other conditions.

To find the capacity of a cylinder in gallons. Multiplying the area in inches by the length of stroke in inches will give the total number of cubic inches; divide this amount by 231 (which is the cubical contents of a U. S. gallon in inches), and the product is the capacity in gallons.

WEIGHT AND CAPACITY OF DIFFERENT STANDARD GALLONS OF WATER.

	Cubic Inches in a Gallon.	Weight of a Gallon in pounds.	Gallons in a Cubic Foot.	
Imperial or English.......	277.274	10.00	6.232102	Weight of a cubic foot of water, English standard, 62.321 lbs. Avoirdupois.
United States.............	231.	8.33111	7.480519	

Weight of Crude Petroleum, 6½ lbs. per U. S. gallon, }
Weight of Refined ,, 6½ lbs. per U. S. gallon, } 42 gallons to the barrel.

A "miner's inch" of water is approximately equal to a supply of 12 U. S. gallons per minute.

FIRE STREAMS.

Pressures required at nozzle and at pump, with quantity and pressure of water necessary to throw wate various distances through different sized nozzles — using 2½ inch rubber hose and smooth nozzles.

G. A. Ellis, C. E.

Size of Nozzles.	1 Inch.				1⅛ Inch.				1¼ Inch.				1⅜ Inch.			
Pressure at nozzle........	40	60	80	100	40	60	80	100	40	60	80	100	40	60	80	100
* Pressure at Pump or Hydrant with 100 ft. 2½ inch rubber hose.	48	73	97	121	54	81	108	135	61	92	123	154	71	107	144	180
Gallons per minute......	155	189	219	245	196	240	277	310	242	297	342	383	293	358	413	462
Horizontal dist. thrown...	109	142	168	186	113	148	175	193	118	156	186	207	124	166	200	224
Vertical dist. thrown.....	79	108	131	148	81	112	137	157	82	115	142	164	85	118	146	169

*For greater lengths of 2½ hose the increased friction can readily be obtained by noting the differences between th above given "pressure at nozzle" and "pressure at pump or hydrant with 100 *feet* of hose." For instance, if it requires a hydrant or pump 8 lbs. more pressure than it does at nozzle to overcome the friction when pumping through 100 feet of 2½ inch hose (using 1 inch nozzle, with 40 lb. pressure at said nozzle), then it requires 16 lbs. pressure to overcome the friction in forcing through 200 feet of same size hose.

EQUATION OF PIPES.

IT is frequently desired to know what number of pipes of a given size are equal in carrying capacity to one pipe of a larger size. At the same velocity of flow the volume delivered by two pipes of different sizes is proportional to the squares of their diameters; thus, one 4-inch pipe will deliver the same volume as four 2-inch pipes. With the same head, however, the velocity is less in the smaller pipe, and the volume delivered varies about as the square root of the fifth power (*i. e.*, as the 2.5 power). The following table has been calculated on this basis. The figures opposite the intersection of any two sizes is the number of the smaller-sized pipes required to equal one of the larger. Thus, one 4-inch pipe is equal to 5.7 2-inch pipes.

Diameter. Inches.	1	2	3	4	5	6	7	8	9	10	12	14	16	18	20	24
2	5.7	1														
3	15.6	2.8	1													
4	32	5.7	2.1	1												
5	55.9	9.9	3.6	1.7	1											
6	88.2	15.6	5.7	2.8	1.6	1										
7	130	22.9	8.3	4.1	2.3	1.5	1									
8	181	32	11.7	5.7	3.2	2.1	1.4	1								
9	243	43	15.6	7.6	4.3	2.8	1.9	1.3	1							
10	316	55.9	20.3	9.9	5.7	3.6	2.4	1.7	1.3	1						
11	401	70.9	25.7	12.5	7.2	4.6	3.1	2.2	1.7	1.3						
12	499	88.2	32	15.6	8.9	5.7	3.8	2.8	2.1	1.6	1					
13	609	108	39.1	19	10.9	7.1	4.7	3.4	2.5	1.9	1.2					
14	733	130	47	22.9	13.1	8.3	5.7	4.1	3.0	2.3	1.5	1				
15	787	154	55.9	27.2	15.6	9.9	6.7	4.8	3.6	2.8	1.7	1.2				
16	.....	181	65.7	32	18.3	11.7	7.9	5.7	4.2	3.2	2.1	1.4	1			
17	.....	211	76.4	37.2	21.3	13.5	9.2	6.6	4.9	3.8	2.4	1.6	1.2			
18	.....	243	88.2	43	24.6	15.6	10.6	7.6	5.7	4.3	2.8	1.9	1.3	1		
19	.....	278	101	49.1	28.1	17.8	12.1	8.7	6.5	5	3.2	2.1	1.5	1.1		
20	.....	316	115	55.9	32	20.3	13.8	9.9	7.4	5.7	3.6	2.4	1.7	1.3	1	
22	.....	401	146	70.9	40.6	25.7	17.5	12.5	9.3	7.2	4.6	3.1	2.2	1.7	1.3	
24	.....	499	181	88.2	50.5	32	21.8	15.6	11.6	8.9	5.7	3.8	2.8	2.1	1.6	1
26	.....	609	221	108	61.7	39.1	26.6	19	14.2	10.9	7.1	4.7	3.4	2.5	1.9	1.2
28	.....	733	266	130	74.2	47	32	22.9	17.1	13.1	8.3	5.7	4.1	3	2.3	1.5
30	.....	787	316	154	88.2	55.9	38	27.2	20.3	15.6	9.9	6.7	4.8	3.6	2.8	1.7
36	.....	.....	499	243	130	88.2	60	43	32	24.6	15.6	10.6	7.6	5.7	4.3	2.8
42	.....	.....	733	357	205	130	88.2	63.2	47	36.2	19	15.6	11.2	8.3	6.4	4.1
48	.....	.....	.....	499	286	181	123	88.2	62.7	50.5	32	21.8	15.6	11.6	8.9	5.7
54	.....	.....	.....	670	383	243	165	118	88.2	67.8	43	29.2	20.9	15.6	12	7.6
60	.....	.....	.....	787	499	316	215	154	115	88.2	55.9	38	27.2	20.3	15.6	9.9

WROUGHT IRON PIPE COLUMNS.

STANDARD W. I. PIPE.

DIAMETER.		AREA OF METAL.	SAFE LOAD IN POUNDS			
INSIDE.	OUTSIDE.		6 FEET.	8 FEET.	10 FEET.	12 FEET.
2″	2.37	1.27	10 300	9 000	7 700	6 500
2½″	2.87	1.56	13 500	12 200	10 800	9 500
3″	3.50	2.55	23 000	21 300	19 600	7 700
3½″	4.00	2.95	27 300	25 800	24 100	22 300
4″	4.50	3.33	31 300	29 900	28 300	26 600
5″	5.56	4.65	44 700	43 300	41 800	40 000
6″	6.62	6.14	59 600	58 400	56 800	55 000
7″	7.60	6.89	67 300	66 200	64 900	63 400
8″	8.65	8.50	83 600	82 400	81 300	79 700

EXTRA HEAVY W. I. PIPE.

2″	2.37	1.45	11 700	10 100	8 700	7 300
2½″	2.87	2.24	19 200	17 200	15 200	13 300
3″	3.50	3.06	27 500	25 500	23 400	21 200
3½″	4.00	3.76	34 600	32 700	30 400	28 000
4″	4.50	4.44	41 600	39 700	37 500	35 200
5″	5.56	6.11	58 600	56 800	54 600	52 200
6″	6.62	8.44	82 000	80 200	77 900	75 400

TABLE OF DECIMAL EQUIVALENTS OF 8THS, 16THS, 32DS, AND 64THS OF AN INCH.

8THS.

$\frac{1}{8}$ = .125
$\frac{1}{4}$ = .250
$\frac{3}{8}$ = .375
$\frac{1}{2}$ = .500
$\frac{5}{8}$ = .625
$\frac{3}{4}$ = .750
$\frac{7}{8}$ = .875

16THS.

$\frac{1}{16}$ = .0625
$\frac{3}{16}$ = .1875
$\frac{5}{16}$ = .3125
$\frac{7}{16}$ = .4375
$\frac{9}{16}$ = .5625
$\frac{11}{16}$ = .6875
$\frac{13}{16}$ = .8125
$\frac{15}{16}$ = .9375

32DS.

$\frac{1}{32}$ = .03125
$\frac{3}{32}$ = .09375
$\frac{5}{32}$ = .15625
$\frac{7}{32}$ = .21875
$\frac{9}{32}$ = .28125
$\frac{11}{32}$ = .34375
$\frac{13}{32}$ = .40625
$\frac{15}{32}$ = .46875
$\frac{17}{32}$ = .53125
$\frac{19}{32}$ = .59375
$\frac{21}{32}$ = .65625
$\frac{23}{32}$ = .71875
$\frac{25}{32}$ = .78125
$\frac{27}{32}$ = .84375
$\frac{29}{32}$ = .90625
$\frac{31}{32}$ = .96875

64THS.

$\frac{1}{64}$ = .015625
$\frac{3}{64}$ = .046875
$\frac{5}{64}$ = .078125
$\frac{7}{64}$ = .109375
$\frac{9}{64}$ = .140625
$\frac{11}{64}$ = .171875
$\frac{13}{64}$ = .203125
$\frac{15}{64}$ = .234375
$\frac{17}{64}$ = .265625
$\frac{19}{64}$ = .296875
$\frac{21}{64}$ = .328125
$\frac{23}{64}$ = .359375
$\frac{25}{64}$ = .390625
$\frac{27}{64}$ = .421875
$\frac{29}{64}$ = .453125
$\frac{31}{64}$ = .484375
$\frac{33}{64}$ = .515625
$\frac{35}{64}$ = .546875
$\frac{37}{64}$ = .578125
$\frac{39}{64}$ = .609375
$\frac{41}{64}$ = .640625
$\frac{43}{64}$ = .671875
$\frac{45}{64}$ = .703125
$\frac{47}{64}$ = .734375
$\frac{49}{64}$ = .765625
$\frac{51}{64}$ = .796875
$\frac{53}{64}$ = .828125
$\frac{55}{64}$ = .859375
$\frac{57}{64}$ = .890625
$\frac{59}{64}$ = .921875
$\frac{61}{64}$ = .953125
$\frac{63}{64}$ = .984375

ELASTIC FORCE OF STEAM, AND CORRESPONDING TEMPERATURE OF THE WATER WITH WHICH IT IS IN CONTACT.

Pressure on a Square Inch.	Elastic Force in Inches of Mercury	Temperature in Degrees of Fahrenheit	Volume of Steam compared with the Volume of Water.	Pressure on a Square Inch	Elastic Force in Inches of Mercury.	Temperature in Degrees of Fahrenheit.	Volume of Steam compared with the Volume of Water.
Lbs.				Lbs.			
14.7	30.00	212.0	1700	56	114.24	290.5	500
15	30.60	212.8	1669	57	116.28	291.7	492
16	32.64	216.3	1573	58	118.32	292.9	484
17	34.68	219.6	1488	59	120.36	294.2	477
18	36.72	222.7	1411	60	122.40	295.6	470
19	38.76	225.6	1343	61	124.44	296.9	463
20	40.80	228.5	1281	62	126.48	298.1	456
21	42.84	231.2	1225	63	128.52	299.2	449
22	44.88	233.8	1174	64	130.56	300.3	443
23	46.92	236.3	1127	65	132.60	301.3	437
24	48.96	238.7	1084	66	134.64	302.4	431
25	51.00	241.0	1044	67	136.68	303.4	425
26	53.04	243.3	1007	68	138.72	304.4	419
27	55.08	245.5	973	69	140.76	305.4	414
28	57.12	247.6	941	70	142.80	306.4	408
29	59.16	249.6	911	71	144.84	307.4	403
30	61.21	251.6	883	72	146.88	308.4	398
31	63.24	253.6	857	73	148.92	309.3	393
32	65.28	255.5	833	74	150.96	310.3	388
33	67.32	257.3	810	75	153.02	311.2	383
34	69.36	259.1	788	76	155.06	312.2	379
35	71.40	260.9	767	77	157.10	313.1	374
36	73.44	262.6	748	78	159.14	314.0	370
37	75.48	264.3	729	79	161.18	314.9	366
38	77.52	265.9	712	80	163.22	315.8	362
39	79.56	267.5	695	82	167.30	317.6	354
40	81.60	269.1	679	84	171.38	319.3	346
41	83.64	270.6	664	86	175.46	321.0	339
42	85.68	272.1	649	88	179.54	322.6	332
43	87.72	273.6	635	90	183.62	324.3	325
44	89.76	275.0	622	95	193.82	328.2	310
45	91.80	276.4	610	100	204.01	332.0	295
46	93.84	277.8	598	110	224.40	339.2	271
47	95.88	279.2	586	120	244.82	345.8	251
48	97.92	280.5	575	130	265.23	352.1	233
49	99.96	281.9	564	140	285.61	357.9	218
50	102.00	283.2	554	150	306.03	363.4	205
51	104.04	284.4	544	160	326.42	368.7	193
52	106.08	285.7	534	170	346.80	373.6	183
53	108.12	286.9	525	180	367.25	378.4	174
54	110.16	288.1	516	190	387.61	382.9	166
55	112.20	289.3	508	200	408.04	387.3	158

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